REVISION HISTORY BG-2T CHASSIS

MODEL

KV-PG21M70
KV-PG21P40/L
(Pearl Blue)
KV-PG21P40/N
(Champange Gold)
KV-PG21P40
KV-PG21P70

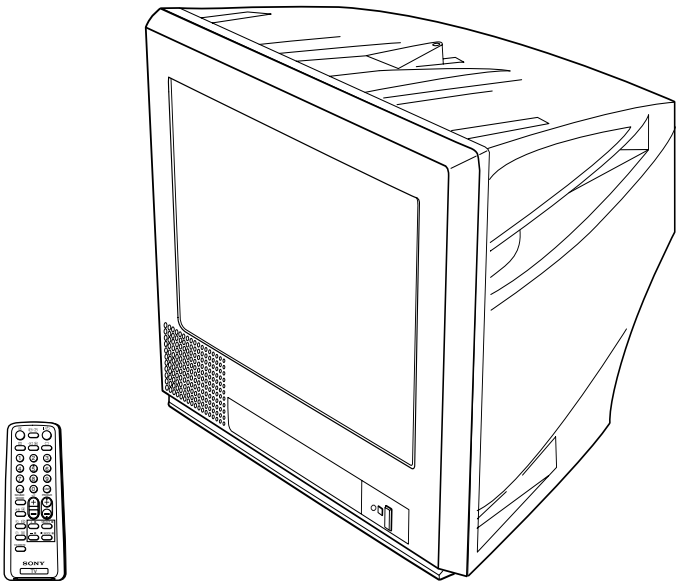
PART NO.: 9-872-260-01

NO	DATE	DESCRIPTION OF REVISION

Self Diagnosis
Supported model

SERVICE MANUAL BG-2T CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-PG21M70	RM-952	E	SCC-U68A-A
KV-PG21P40/L (Pearl Blue)	RM-952 (Blue)	Malaysia	SCC-U71A-A
KV-PG21P40/N (Champange Gold)	RM-952 (Silver)	Malaysia	SCC-U71B-A
KV-PG21P40	RM-952	Singapore	SCC-U66A-A
KV-PG21P70	RM-952	E	SCC-U68B-A



TRINITRON® COLOR TV

SONY®

SPECIFICATIONS

			Note
Power requirements	110-240 V AC, 50/60 Hz		
	220-240 V AC, 50/60 Hz		Malaysia only
Power consumption (W)	Indicated on the rear of the TV		
Television system	B/G		KV-PG21P70/PG21P40 only
	B/G, I, D/K, M		KV-PG21M70 only
Color system	PAL, PAL 60, NTSC3.58 (AV IN), NTSC4.43		KV-PG21P70/PG21P40 only
	PAL, PAL 60, SECAM, NTSC 3.58, NTSC 4.43		KV-PG21M70 only
Channel coverage			
B/G	VHF: E2 to E12 UHF: E21 to E69 CATV: S01 to S03, S1 to S41		
I	UHF: B21 to B68 CATV: S01 to S03, S1 to S41		KV-PG21M70
D/K	VHF: C1 to C12, R1 to R12 UHF: C13 to C57, R21 to R60 CATV: S01 to S03, S1 to S41, Z1 to Z39		KV-PG21M70
M	VHF: A2 to A13 UHF: A14 to A79 CATV: A-8 to A-2, A to W+4, W+6 to W+84		KV-PG21M70
ㄱ (Antenna)	75-ohm external terminal		
Audio output (Speaker)	3W		
Number of terminal			
Video	Input: 2* Output: 1	Phono jacks; 1 V_{P-P}, 75 ohms	* One input lines available
♪ Audio	Input: 2* Output: 1	Phono jacks; 500 mVrms	* One input lines available
ㅓ (Earphone)	Output: 1	Monaural minijack	
Picture tube	21 in.		
Tube size (cm)	54		Measured diagonally
Screen size (cm)	51		Measured diagonally
Dimension (w/h/d, mm)	497 x 458 x 487		
Mass (kg)	25		

Design and specifications are subject to change without notice.

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER lamp will automatically begin to flash.
The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER lamp flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

1. DIAGNOSTIC TEST INDICATORS

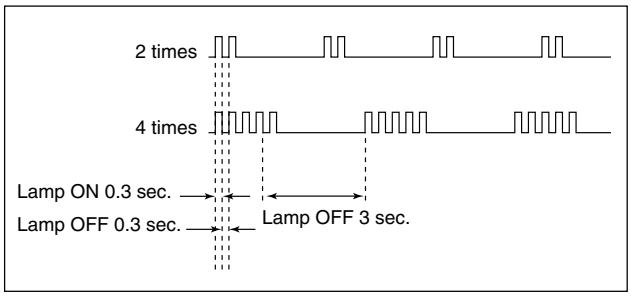
When an errors occurs, the STANDBY/TIMER lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.

Result for all of the following diagnostic items are displayed on screen. No error has occured if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY/TIMER lamp flashes	Self-diagnostic display/Diagnostic result	Probable Cause Location	Detected Symptoms
• Power does not turn on	Does not light	—	• Power cord is not plugged in. • Fuse is burned out F4601 (F)	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
• +B overcurrent (OCP) • Horizontal deflection overdrive	2 times	002:000 or 002:001~255	• H.OUT Q801 is shorted. (A board)	• Power does not come on. • Load on power line is shorted. • Has entered standby state after horizontal raster. • Power line is shorted or power supply is stopped.
• White balance failure (no PICTURE) • Vertical deflection stopped	4 times	004:000 or 004:001~225	• -13V is not supplied. (A board) • IC 551 faulty (A board)	• Vertical deflection pulse is stopped
• Micro reset	—	101:00 or 101:001~225	• Discharge CRT (CV Board) • Static discharge • External noise	• Power is shut down shortly, after this return back to normal. • Detect Micro latch up.

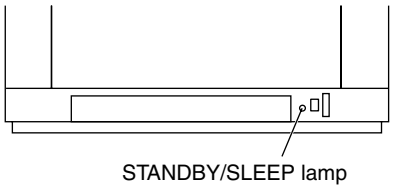
Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the microcontroller is displayed on the screen.
Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

2. DISPLAY OF STANDBY/TIMER LIGHT FLASH COUNT



Diagnostic Item	Flash Count*
+B overcurrent/overvoltage	2 times
Vertical deflection stopped	4 times

* One flash count is not used for self-diagnostic.



3. STOPPING THE STANDBY/TIMER FLASH

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER lamp from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurances of failure for confirmation on the screen:

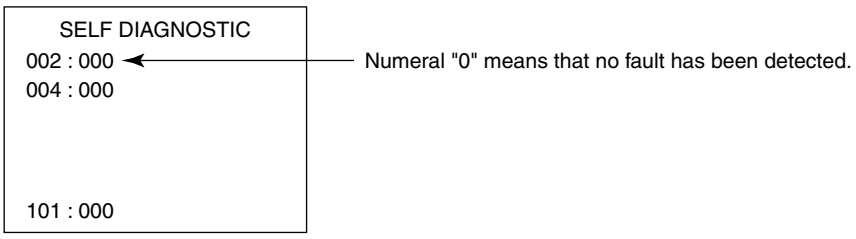
[To Bring Up Screen Test]
In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display ➡ channel 5 ➡ Sound volume - ➡ Power ON

⇧

Note that this differs from entering the service mode (mode volume +).

Self-Diagnosis screen display



5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

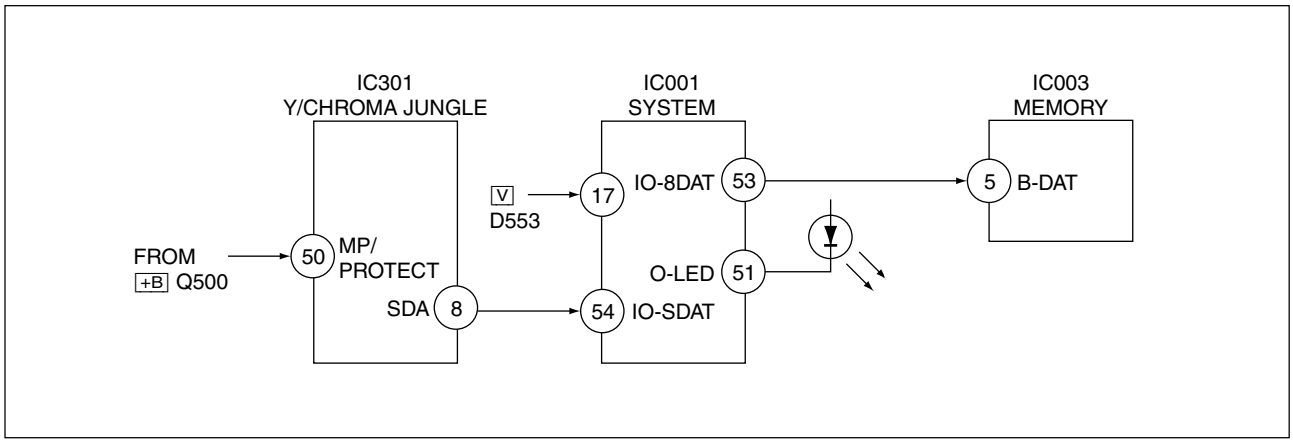
Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]
To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.

Channel [8] ➡ 0

[Quitting Self-diagnostic screen]
To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT

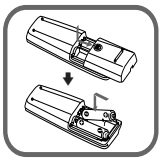


[+B overcurrent (OCP)]	Occurs when an overcurrent on the +B(135) line is detected by Q500. If Q500 go to ON and the voltage to pin 50 of IC301 more than 3.5V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.
[Vertical deflection stopped]	Occurs when an absence of the vertical deflection pulse is detected by Pin 17 and IC001 shut down the power supply.
[White balance failure]	If the RGB levels* do not balance or become low level within 5 seconds, this error will be detected by IC301. TV will stay on, but there will be no picture. * (Refers to the RGB levels of the AKB detection Ref pulse that detects IK.)

SECTION 1
GENERAL

The operating instruction mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

A Getting Started

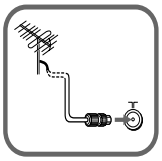


Step 1

Insert the batteries (supplied) into the remote.

Note

- Do not use old batteries nor use different types of batteries together.

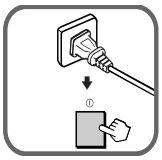


Step 2

Connect the antenna cable (not supplied) to ⊤ at the rear of the TV.

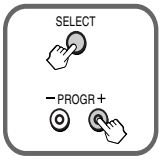
Tip

- You can also connect your TV to other optional components. (See E)



Step 3

Plug in the power cord, then press ⏻ on the TV to turn it on.

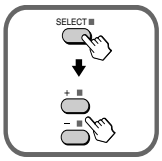


Step 4

Press SELECT and PROGR + on the TV at the same time for one to two seconds to preset the channels automatically. (See J)

Tip

- To stop the automatic channel presetting, press SELECT twice.



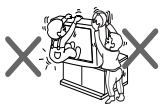
Step 5

Press SELECT on the remote until "LANGUAGE/语言: ENGLISH" appears on the screen, then press + or – to change the on-screen display language.

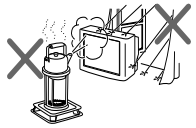
B WARNING

- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC. (Malaysia: 220 – 240 V AC)
- Do not plug in the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.
- To avoid battery leakage and damage to the remote, remove the batteries from the remote if you are not going to use it for several days. If any liquid that leaks from the batteries touches you, immediately wash it away with water.

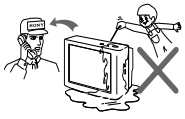
For your own safety, do not touch any part of the TV, the power cord and the antenna cable during lightning storms.



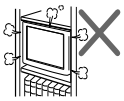
For children's safety, do not leave children alone with the TV. Do not allow children to climb onto it.



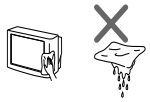
To prevent fire or shock hazard, do not expose the TV to rain or moisture.



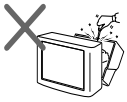
Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.



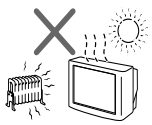
Do not block the ventilation openings of the TV. Do not install the TV in a confined space, such as a bookcase or built-in cabinet.



Clean the TV with a dry and soft cloth. Do not use benzine, thinner, or any other chemicals to clean the TV. Do not scratch the picture tube.

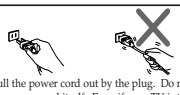


Do not open the cabinet and the rear cover of the TV as high voltages and other hazards are present inside the TV. Refer servicing and disposal of the TV to qualified personnel.



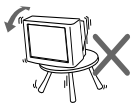
Your TV is recommended for home use only. Do not use the TV in any vehicle or where it may be subject to excessive dust, heat, moisture or vibrations.

WARNING (continued)



Pull the power cord out by the plug. Do not pull the power cord itself. Even if your TV is turned off, it is still connected to the AC power source (mains) as long as the power cord is plugged in. Unplug the TV before moving it or if you are not going to use it for several days.

Do not plug in too many appliances to the same power socket. Do not damage the power cord.



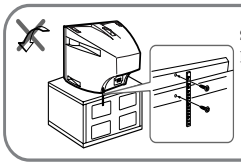
Do not install the TV in an unstable position. Use a proper TV stand.

Do not place any objects on the TV.

C Securing the TV

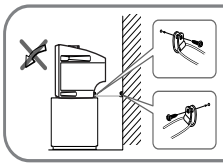
▶ **KV-PG21/TG21 only**

To prevent the TV from falling, use the supplied screws, clamps and band to secure the TV.



Screw the band to the TV stand and to the provided hole at the rear of your TV.

or

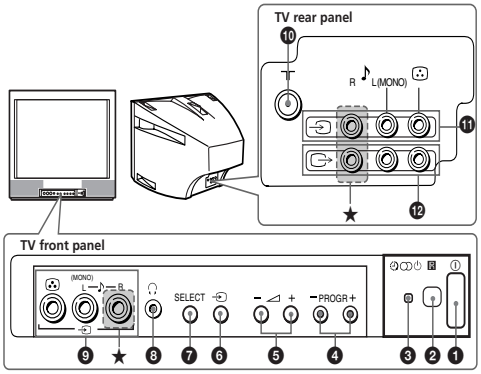


(1) Put a cord or chain through the clamps.
(2) Screw one clamp to a wall or pillar and the other clamp to the provided hole at the rear of your TV.

Note

- Use only the supplied screws. Use of other screws may damage the TV.

D TV front and rear panels



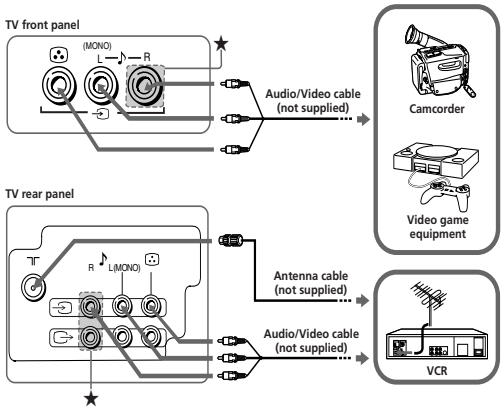
Button	Function
❶ ⏻	Turn off completely or turn on the TV.
❷ R	Remote control sensor.
❸ ⏻	Standby indicator.
❸	Stereo/bilingual indicator. (KV-TG21 only)
❸	Wake Up indicator.
❹ PROGR +/–	Select program number.
❺ +/–*	Adjust volume.
❻	Select TV or video input.
❼ SELECT	Select the desired item.
❽	Headphone terminal. (KV-TG21 only)
❽	Earphone terminal. (KV-PG21/PG14 only)
❾, ⓫	Video input terminal.
❿ ⊤	Antenna terminal.
⓬	Monitor output terminal.

* You can also use the +/– buttons on the TV to work as the +/– buttons on the remote.

★ *The R (audio input) jacks are only available for KV-TG21 only.*

E Connecting optional components

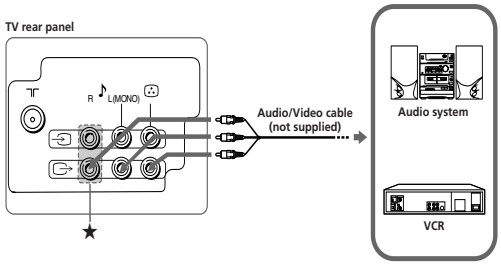
Connecting to the video input terminal ( )



Note

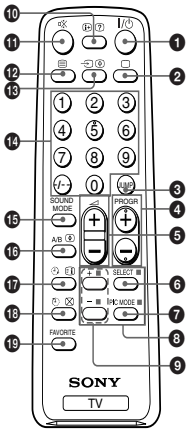
- Do not connect video equipment to (video input) at the front and the rear of your TV at the same time; otherwise the picture will not be displayed properly on the screen.

Connecting to the monitor output terminal ( )



★ *The R (audio input) jacks are only available for KV-TG21 only.*

H Remote control



Button	Function	See
❶ I/⏻	Turn off temporarily or turn on the TV.	–
❷ ▢	Display the TV program.	–
❸ JUMP	Jump to previous program number.	–
❹ PROGR +/–	Select program number.	–
❺ ◿ +/–	Adjust volume.	–
❻ SELECT	Select the desired item.	–
❼ PIC MODE	Select picture mode.	K
❽ +/–	Adjust items.	–
❾	Display on-screen information.	–
❿	Mute the sound.	–
⓫	Select TV or video input.	–
⓬ 0 – 9, -/--	Input numbers.	–
Timer operations		
⓭	Set TV to turn on automatically.	I
⓮	Set TV to turn off automatically.	I
Sound mode operations (KV-TG21M61 only)		
⓯ SOUND MODE	Select sound mode.	K
Stereo/bilingual operations (KV-TG21M61 only)		
⓰ A/B	Select stereo/bilingual mode.	M
Teletext operations (KV-TG21M61 only)		
❽ ■ (red, green, yellow, blue)	Access a FASTEXT menu.	N
❿	Reveal concealed information	N
⓬	Display Teletext broadcast.	N
⓲	Stop Teletext display from scrolling.	N
⓰	Enlarge the Teletext display.	N
⓱	Display Teletext service contents.	N
⓲	Show TV screen while waiting for Teletext page.	N
⓳ FAVORITE	Not function for your TV.	–

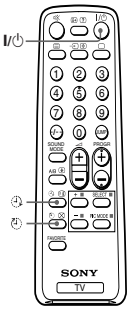
F Troubleshooting

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer.

Symptom	Solutions
Snowy picture, noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. • Preset the channel manually again. (See J) • Check the antenna setup. Contact a Sony dealer for advice.
Good picture, noisy sound	• Select the appropriate TV system. (KV-PG21M70/PG14M40/TG21M61 only) (See J) • Press A/B until the sound is optimal. (KV-TG21M61 only)
No picture,no sound	• Check the power cord, antenna and the VCR connections. • Press I/⏻ (power) or ⏻ (main power) to turn on the TV.
Good picture, no sound	• Press ◿ + to increase the volume level. • Press to cancel the muting.
Dotted lines or stripes	• Do not use a hair dryer or other equipment near the TV. • Check the antenna setup. Contact a Sony dealer for advice.
Double images or "ghosts"	• Use the fine tuning ("FINE") function. (See J) • Turn off or disconnect the booster if it is in use. • Check the antenna setup. Contact a Sony dealer for advice.
No color	• Select the appropriate color system. (See J) • Adjust the color level. (See K) • Check the antenna setup. Contact a Sony dealer for advice.
Abnormal color patches	• Keep external speakers or other electrical equipment away from the TV. Press ⏻ (main power) to turn off the TV for about 15 minutes, then turn it on again to demagnetize the TV.
Teletext display is incomplete (snowy picture or double images). (KV-TG21M61 only)	• Check the antenna cable and connection on the TV, VCR and on the wall. • Use the fine tuning ("FINE") function. (See J) • Check the antenna setup. Contact a Sony dealer for advice.
The ⏻ (standby) indicator on your TV flashes red several times after every three seconds.	• Count the number of times the ⏻ (standby) indicator flashes. Press ⏻ (main power) to turn off your TV. Contact your nearest Sony service center.
TV cabinet creaks.	• Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction.
A "boom" sound is heard when the TV is turned on.	• The TV's demagnetizing function is working. This does not indicate a malfunction.

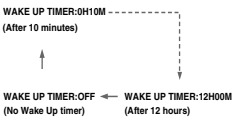
I Setting the timers

You can turn on and off your TV by using the ⏲ and ⏲ buttons respectively.



Setting the Wake Up timer

1 Press ⏲ until the desired period of time appears on the screen.



The Wake Up timer starts immediately after you have set it.

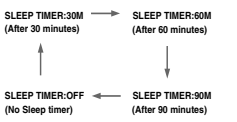
2 Select the program number or video input you want to wake up to.

3 Press I/⏻, or set the Sleep timer if you want the TV to turn off automatically.

The ⏲ indicator on the TV lights up orange when the TV goes into standby mode.

Setting the Sleep timer

Press ⏲ until the desired period of time appears on the screen.



The Sleep timer starts immediately after you have set it.

Notes

- You can also cancel the Wake Up and Sleep timers by turning off the TV's main power.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into standby mode.

Presenting channels (continued)

To change the TV system setting (KV-PG21M70/PG14M40/TG21M61 only)

If the picture or sound is abnormal when receiving programs through the ⅂ (antenna) terminal

(1) Press SELECT until "TV SYS" appears on the screen.

(2) Press + or – to select the appropriate TV system until the picture or sound quality is optimal.

B/G → I → D/K → M

To change the color system setting

If the color is abnormal when receiving programs through the ⅂ (antenna) terminal or the ⇨ (video input) terminal

(1) Press SELECT until "COLOR SYS" appears on the screen.

(2) Press + or – to select the appropriate color system until the color is optimal.

AUTO → PAL → SECAM → NTSC3.58 → NTSC4.43

Note

- The color system "SECAM" is available for KV-PG21M70/PG14M40/TG21M61 only.

To skip program numbers

(1) Press PROGR +/– or the number buttons until the unused or unwanted program number appears on the screen.

(2) Press SELECT until "MANUAL PROGRAM" appears on the screen.

(3) Press + or – once to enter the "MANUAL PROGRAM" mode.

(4) Press PIC MODE to skip the unused or unwanted program number.

(5) Press SELECT to exit the "MANUAL PROGRAM" mode.

Note

- To restore the skipped program number again, preset the channel automatically or manually.

To use the fine tuning function

The fine tuning (FINE) function may help to reduce the following problems: incomplete Teletext display (KV-TG21M61 only), double images and lines moving across the TV screen.

You can use the fine tuning function as below:

(1) Select the program number you want to adjust.

(2) Press SELECT until "MANUAL PROGRAM" appears on the screen.

(3) Press + or – once to enter the "MANUAL PROGRAM" mode.

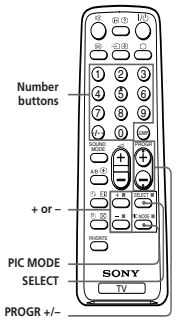
(4) Press ⓕ to display "FINE" on the screen.

(5) Press + or – continuously until the above problems are minimized.
The + or – icon on the screen flashes while tuning.

(6) Press SELECT to exit the "MANUAL PROGRAM" mode.

J Presetting channels

You can automatically preset up to 100 TV channels in numerical sequence from program number 1, or manually preset desired channels and channels that cannot be preset automatically.



Presetting channels automatically from a specified program number

1 Press SELECT until "AUTO PROGRAM" appears on the screen.

2 Press + or – once to enter the "AUTO PROGRAM" mode.
The on-screen display will start flashing.

3 Press PROGR +/– or the number buttons until the desired program number appears on the screen.

4 Press + or – to start presetting channels automatically.

Presetting channels manually

1 Press SELECT until "MANUAL PROGRAM" appears on the screen.

2 Press + or – once to enter the "MANUAL PROGRAM" mode.

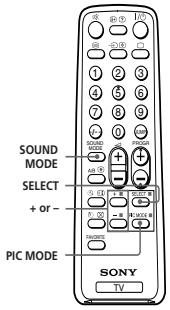
3 Press PROGR +/– or the number buttons until the desired program number appears on the screen.

4 Press + or – until the desired channel picture appears on the screen.

5 To preset other channels manually, repeat steps 3 to 4.

K Customizing the picture and sound

You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.



Selecting the picture mode

Press PIC MODE to select the desired picture mode.

Select	To
"DYNAMIC"	view high contrast pictures.
"STANDARD"	view normal contrast pictures.
"SOFT"	view mild pictures.

Selecting the sound mode

▶ KV-TG21M61 only

Press SOUND MODE to select the desired sound mode.

Select	To
"♪ DYNAMIC"	listen to dynamic and clear sound that emphasizes the low and high sound.
"♪ DRAMA"	listen to sound that emphasizes vocals and background music.
"♪ SOFT"	listen to soft sound.

Adjusting the picture and sound settings

1 Press SELECT until the desired setting appears.
Each time you press SELECT, the setting item will change as follows:

PICTURE → COLOR → BRIGHT → HUE → SHARP → BASS → TREBLE → BALANCE → (PICTURE)

2 Press + or – to adjust the item.

3 To adjust other items, repeat steps 1 to 2.

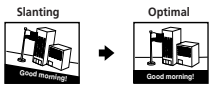
Notes

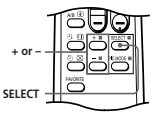
- "BASS", "TREBLE" and "BALANCE" can be adjusted for KV-TG21M61 only.
- "HUE" can be adjusted for the NTSC color system only.
- Reducing "SHARP" can also reduce picture noise.

L Adjusting the picture position

▶ KV-PG21M70/PG21P70/PG21P40/TG21M61 only

If the picture is slanting, you can adjust the picture position using the "PIC ROTATION" function until it is optimal.





1 Press SELECT repeatedly until "PIC ROTATION" appears on the screen.

2 Press + or – to adjust the picture position.
The ↴⊟ or ⊟↾ icon on the screen flashes while adjusting.

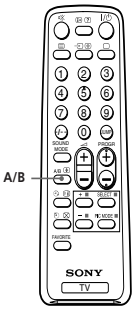
Note

- To reduce the slanting picture, keep external speakers or other electrical equipment away from the TV.

M Enjoying stereo or bilingual programs

▶ **KV-TG21M61 only**

You can enjoy stereo sound or bilingual programs of NICAM and A2 stereo systems by using the A/B button.



When receiving a NICAM program

Broadcasting	On-screen display (Selected sound)
NICAM stereo	NICAM (Stereo sound) → MONO (Regular sound)
NICAM bilingual	NICAM MAIN (Main sound) → NICAM SUB (Sub sound) → MONO (Regular sound)
NICAM monaural	NICAM MAIN (Main sound) → MONO (Regular sound)

When receiving an A2 program

Broadcasting	On-screen display (Selected sound)
A2 stereo	MONO (Regular sound) → STEREO (Stereo sound)
A2 bilingual	MAIN (Main sound) → SUB (Sub sound)

Notes

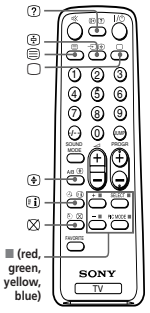
- If the stereo sound is noisy when receiving a stereo program, select "MONO". The sound becomes monaural, but the noise is reduced.
- If the sound is distorted when receiving a monaural program through the Y (antenna) terminal, press A/B repeatedly until "MONO" appears on the screen. To cancel the monaural sound setting, press A/B again until "AUTO" appears on the screen.

N Viewing Teletext

▶ **KV-TG21M61 only**

Some TV stations broadcast an information service called Teletext which allows you to receive various information, such as stock market reports and news.

You can use the buttons on the remote to view Teletext.



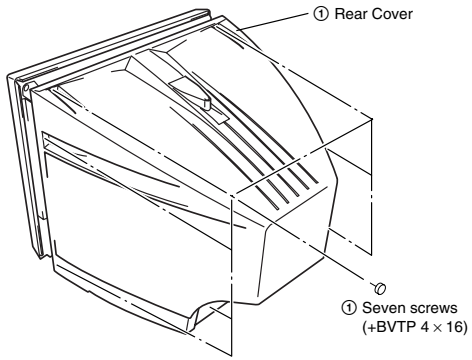
To	Do this
display a Teletext page on the TV picture	Press ☰. Each time you press ☰, the screen changes as follows: Teletext → Teletext and TV → TV. If there is no Teletext broadcast, "100" is displayed at the top left corner of the screen.
check the contents of a Teletext service	Press ☰i. An overview of the Teletext contents, including page numbers, appears on the screen.
select a Teletext page	Press the number buttons to enter the three-digit page number of the desired Teletext page. If you make a mistake, reenter the correct page number. To access the next or previous page, press PROGR +/–.
hold (pause) a Teletext display	Press ⇳ to display the symbol "⇳" at the top left corner of the screen. To resume normal Teletext viewing, press ⇳ or ☰.
reveal concealed information (e.g., an answer to a quiz)	Press ?. To conceal the information, press the button again.
enlarge the Teletext display	Press ↕. Each time you press ↕, the Teletext display changes as follows: Enlarge upper half → Enlarge lower half → Normal size.
stand by for a Teletext page while watching a TV program	1 Enter the Teletext page number that you want to refer to, then press ⊠. 2 When the page number is displayed, press ☰ to show the text.
select a FASTEXT menu or the colored boxes	Press ■ (red, green, yellow and blue) that corresponds to the desired menu or page number.
turn off Teletext	Press ▢.

Note

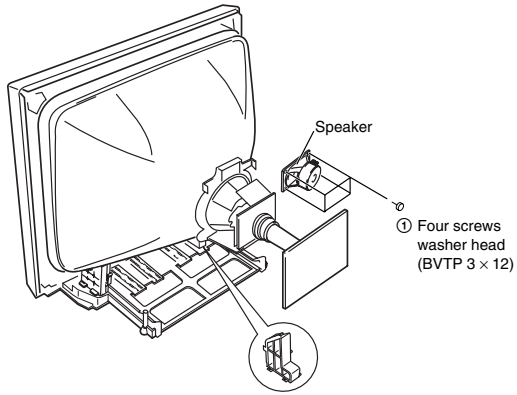
- The FASTEXT feature can be used only when the FASTEXT broadcast is available.

SECTION 2
DISASSEMBLY

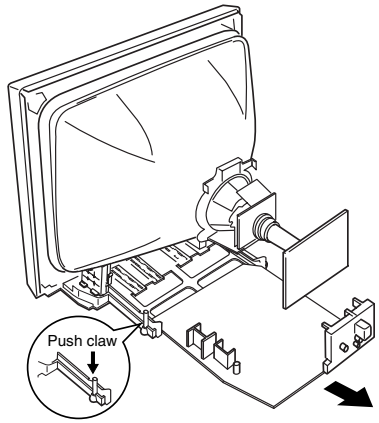
2-1. REAR COVER REMOVAL



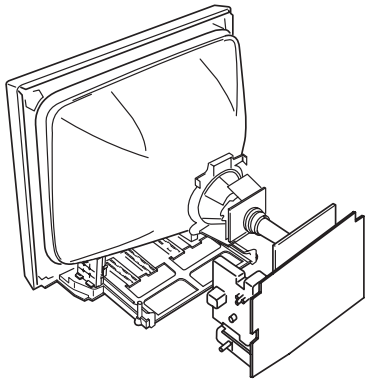
2-2. SPEAKER REMOVAL



2-3. CHASSIS ASSY REMOVAL



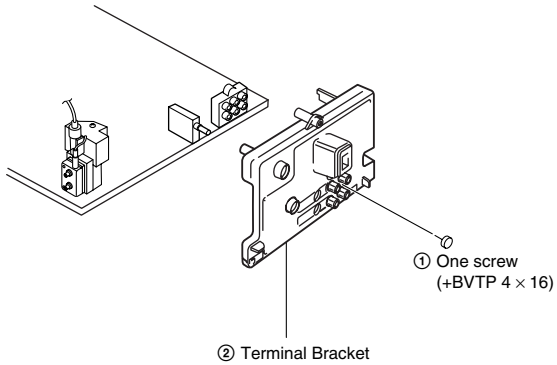
2-4. SERVICE POSITION



Caution: Do not take out CRT support block while TV set in standing position.

Note: Undress necessary wires that creates tension while placing the chassis into Service Position.

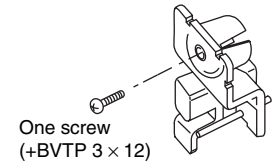
2-5. TERMINAL BRACKET REMOVAL



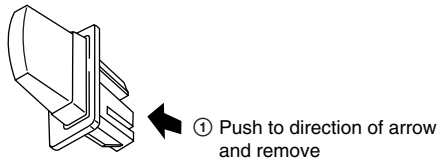
2-6. REPLACEMENT OF PARTS

For replacements of light guide,unscrew them, exchange with new parts and fix them with screws respectively.

2-6-1. Replacement of Light Guide



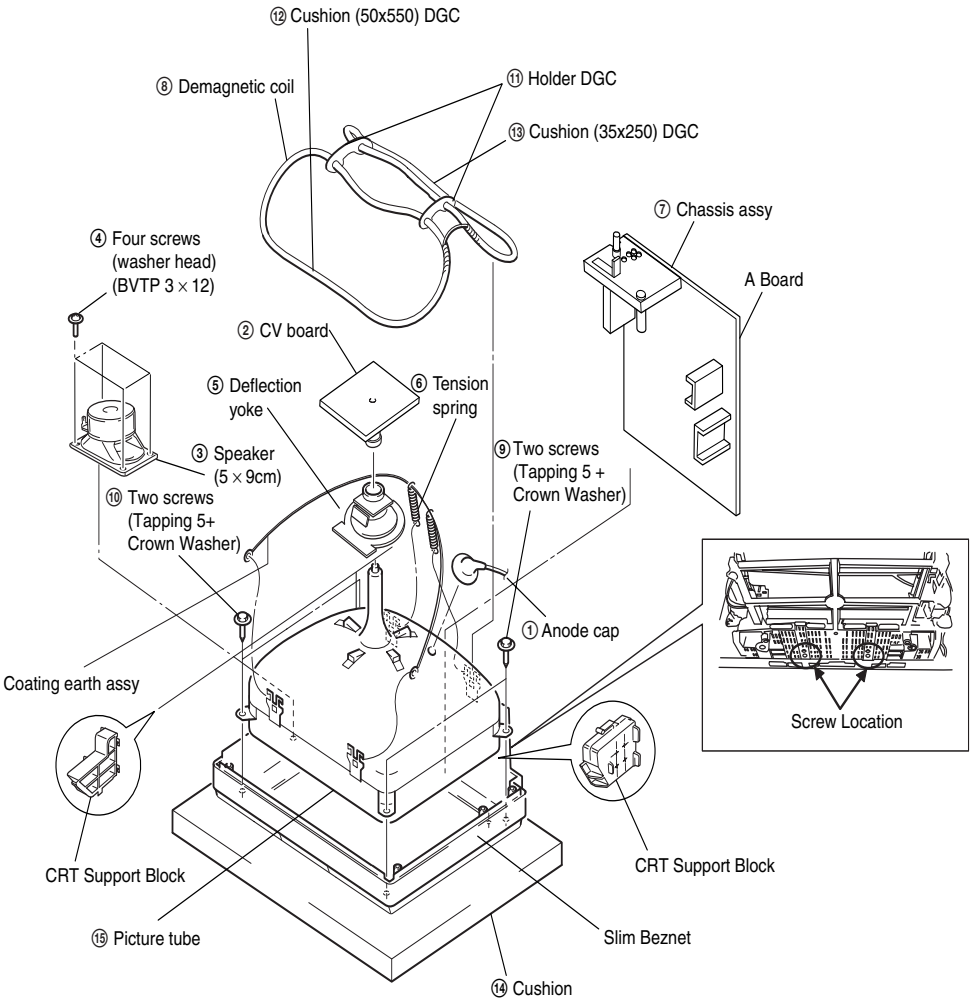
2-6-2. Replacement of Power Button



2-7. PICTURE TUBE REMOVAL

Note:

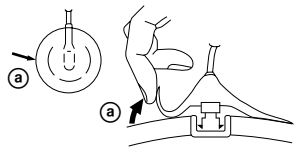
- Please make sure the TV set is not in standing position before removing necessary CRT support located on bottom right and left.



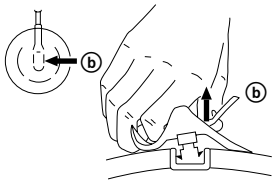
• REMOVAL OF ANODE-CAP

NOTE : After removing the anode, short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT.

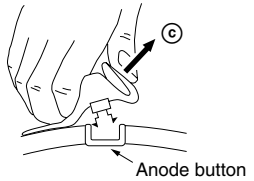
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



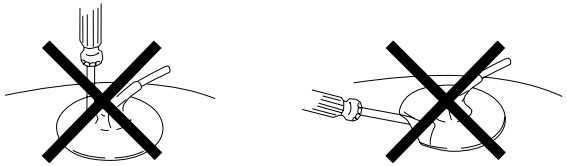
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.



③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ.

• HOW TO HANDLE AN ANODE-CAP

① Do not damage the surface of anode-caps with sharp shaped objects.
② Do not press the rubber too hard so as not to damage the inside of anode-cap. A metal fitting called the shatter-hook terminal is built into the rubber.
③ Do not turn the foot of rubber over too hard. The shatter-hook terminal will stick out or damage the rubber.



SECTION 3
SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switches should be set as follows unless otherwise noted:

PICTURE control ..... normal
BRIGHTNESS control ..... normal

Perform the adjustments in the following order :

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note : Test Equipment Required.

1. Pattern Generator
2. Degausser
3. Oscilloscope

Preparation :

In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input a white signal with the pattern generator.
   Contrast, Brightness } normal
2. Set the pattern generator raster signal to a green raster.
3. Move the deflection yoke to the rear and adjust with the purity control so that the green is at the center and the blue and the red take up equally sized areas on each side. (See Figures 3-1 through 3-4.)
4. Move the deflection yoke forward and adjust so that the entire screen is green. (See Figure 3-1.)
5. Switch the raster signal to blue, then to red and verify the condition.
6. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws and DY spacers.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it. (See Figure 3-4.)

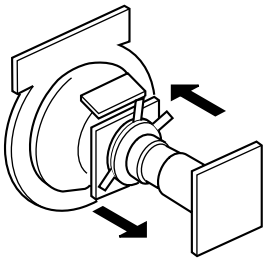


Fig. 3-1

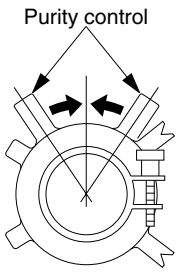


Fig. 3-2

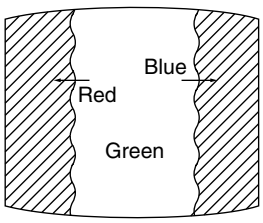


Fig. 3-3

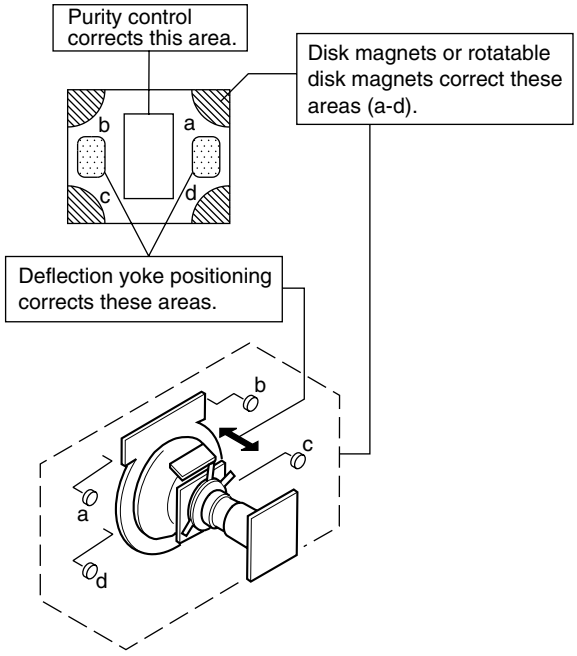


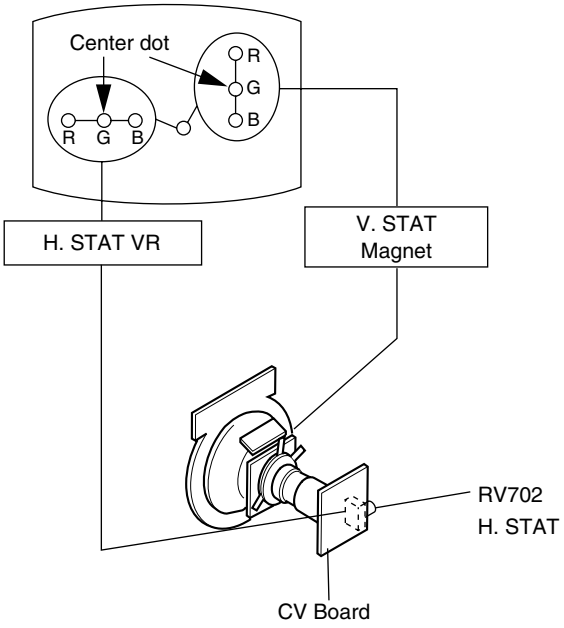
Fig. 3-4

3-2. CONVERGENCE

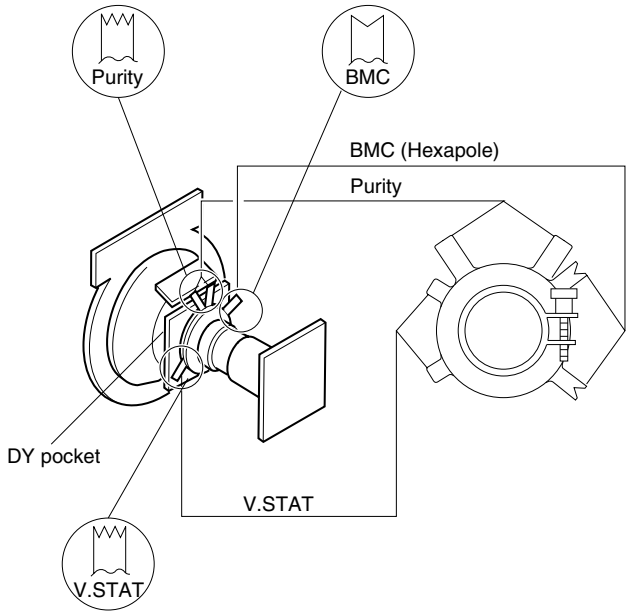
Preparation :

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Receive dot/hatch signal.
- Pic mode: Soft.

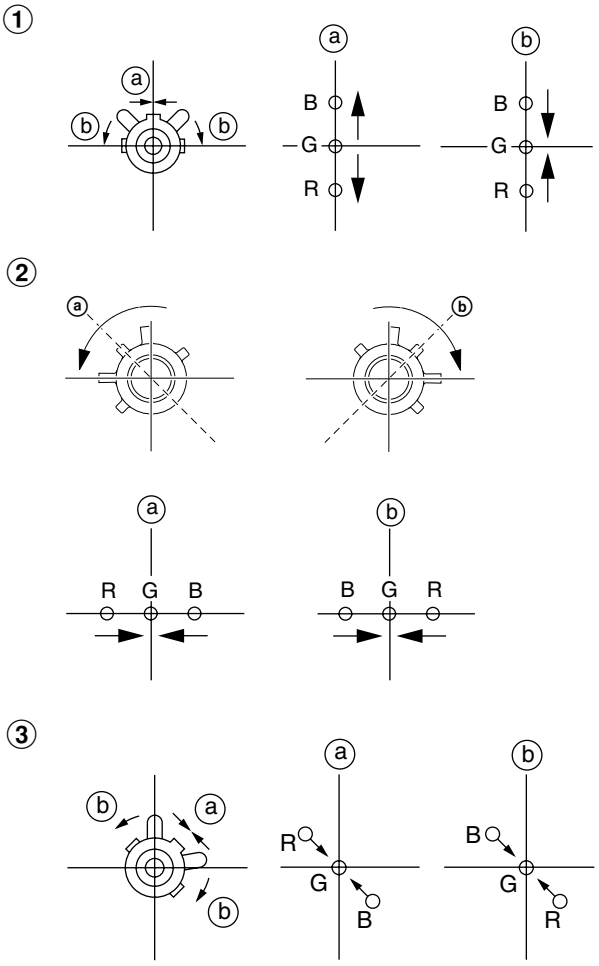
(1) Horizontal and Vertical Static Convergence



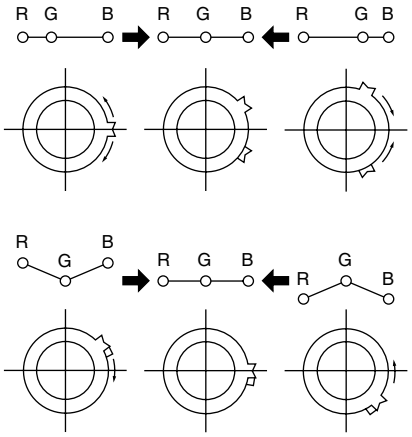
1. (Moving vertically), adjust the V.STAT magnet so that the red, green and blue dots are on top of each other at the center of the screen.
2. (Moving horizontally), adjust the H.STAT VR control so that the red, green and blue dots are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green and blue dots together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V.STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other, so be sure to perform adjustments while tracking.)



- Operation of V. Stat magnet
  If the V. Stat magnet is moved in the "a" and "b" arrows, the red, green and blue dots move as shown below.



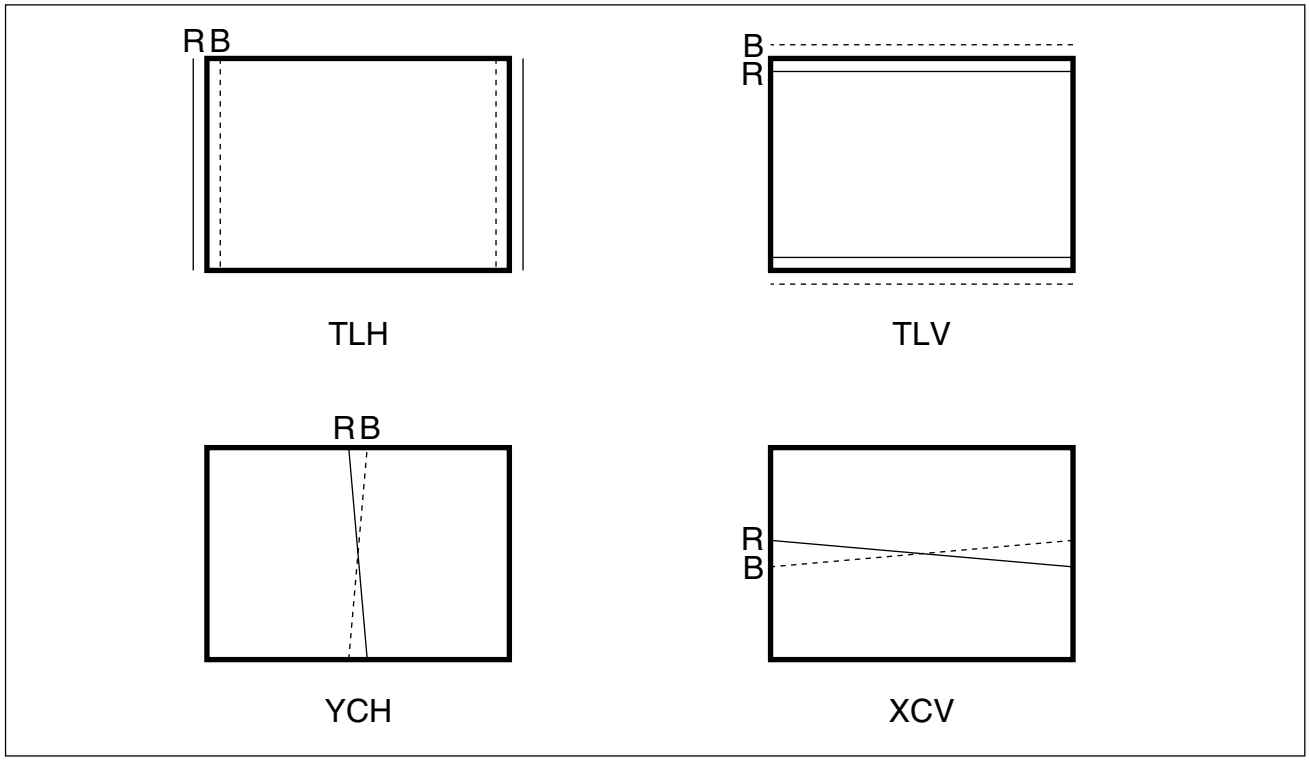
④ BMC (Hexapole) Magnet.
If the red, green and blue dots are not balanced or aligned, then use the BMC magnet to adjust in the manner described below.



(2) Dynamic Convergence Adjustment

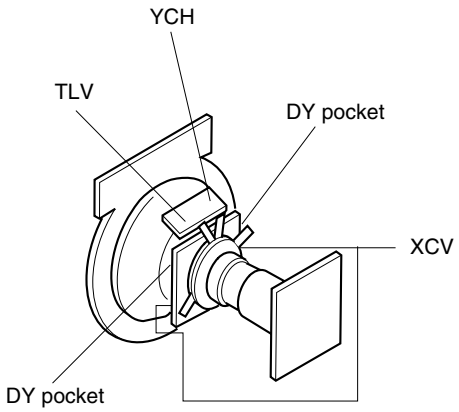
Preparation:

Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence

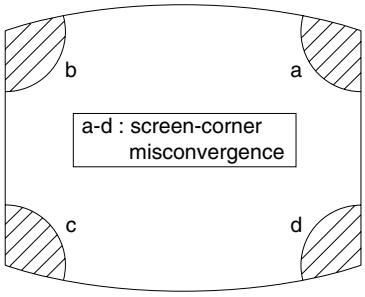


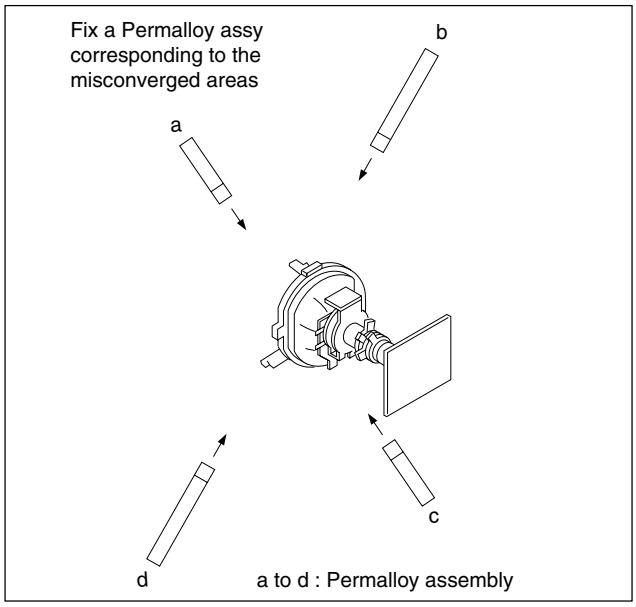
TLH	Insert	TLH	Correction Plate to DY Pocket (Left or Right)
YCH	Rotate	YCH	VOL on DY
TLV	Rotate	TLV	VOL ON DY
XCV	Rotate	XCV	Adj core on DY

ON DY:



(3) Screen-corner Convergence

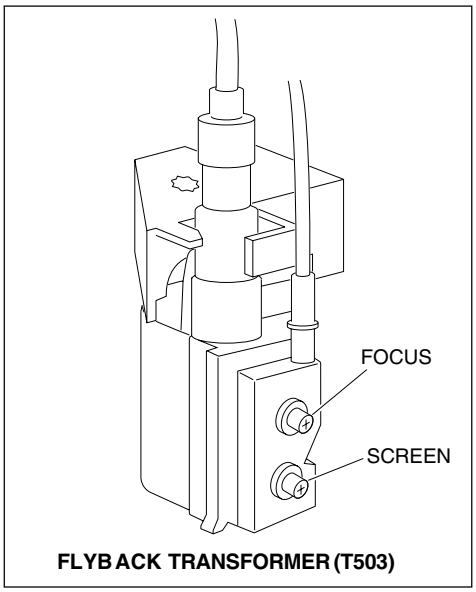




3-3. FOCUS ADJUSTMENT

FOCUS adjustment should be completed before W/B adjustment.

1. Receive digital monoscope pattern.
2. Set "Picture Mode" to "DYNAMIC".
3. Adjust focus VR so that the center of screen becomes just focus.
4. Change the receiving signal to white pattern and blue back.
5. Confirm magenta ring is not noticeable. Incase magenta is very obvious, adjust focus VR to take balance of magenta ring and focus.

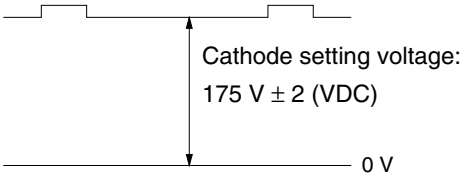


FLYBACK TRANSFORMER (T503)

3-4. G2 (SCREEN) AND WHITE BALANCE ADJUSTMENTS

1. G2 (SCREEN) ADJUSTMENT

1) Set the PICTURE to normal.
2) Put to VIDEO input mode without signals.
3) Connect R, G and B of the CV board cathode to the oscilloscope.
4) Adjust BRIGHTNESS to obtain the cathode voltage to the value below.
5) Adjust G2 (screen) on the FBT until picture shows the point before cut off.

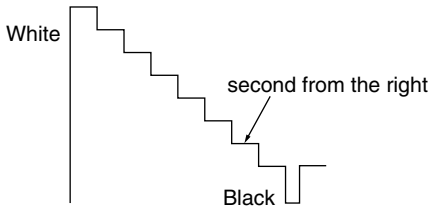


2.A. WHITE BALANCE ADJUSTMENT

1) Set to Service Mode (Refer Section 4-1: ADJUSTMENTS WITH COMMANDER).
2) Input white raster signal.
3) Set 49 (ABL) and IF (VP2) service mode to 00.
4) Set Picture to DYNAMIC.
5) Select OB (RDR) with [1] and [4], and set the level to 25 with [3] and [6] for best white balance.
6) Select OC 'GDR' and OD 'BDR' with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
7) Write into the memory by pressing [MUTING] then [0].
8) Set back 49 'ABL' and IF 'VP2' service mode to original data.

2.B. SUB BRIGHT ADJUSTMENT

1) Set to service mode.
2) Set 49(ABL) and IF (VP2) service mode to 00
3) Input a staircase signal of black to white from the pattern generator.
4) BRIGHTNESS .... 50%.
   PICTURE ..... MINIMUM
5) Select OE 'SBR' with [1] and [4], and adjust OE 'SBR' level with [3] and [6] so that the second stripe from the right is dimly lit.
6) Write into the memory by pressing [MUTING] then [0].
7) Set back 49 (ABL) and IF (VP2) service mode to original data.



SECTION 4
CIRCUIT ADJUSTMENTS

4-1. ADJUSTMENT WITH COMMANDER

Service adjustments to this model can be performed using the supplied Remote Commander RM-952

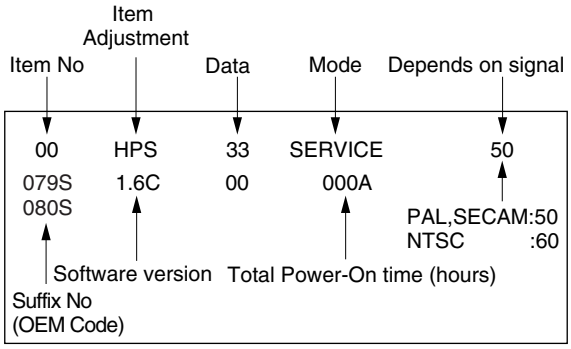
a. ENTERING SERVICE MODE

With the unit on standby

→ [DISPLAY] → [5] → [VOL (+)] → [POWER]

This operation sequence puts the unit into service mode.

The screen display is :



b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press [POWER] button on the commander), then press [POWER] button again, hereupon it becomes TV mode.

c. METHOD OF WRITE INTO MEMORY

1) Set to Service Mode.
2) Press [1] (UP) and [4] (DOWN), to select the adjustment.
4) Press [MUTING] button to indicate WRITE on the screen.
5) Press [0] button to write into memory.

d. MEMORY WRITE CONFIRMATION METHOD

1) After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again to confirm adjustments were made.

[1], [4]	Select the adjustment item.
↓	
[3], [6]	Raise/lower the data value.
↓	
[MUTING]	Writes.
↓	
[0]	Executes the writing.

e. OTHER FUNCTION VIA REMOTE COMMANDER

[7], [0]	All the data becomes the values in memory.
[8], [0]	All user control goes to the standard state.
[5], [0]	Service data initialization (Be sure not to use usually.)
[2], [0]	Copy and write all data.
[MUTE], [0]	Write 50Hz adjustment data to 60Hz or vice versa.

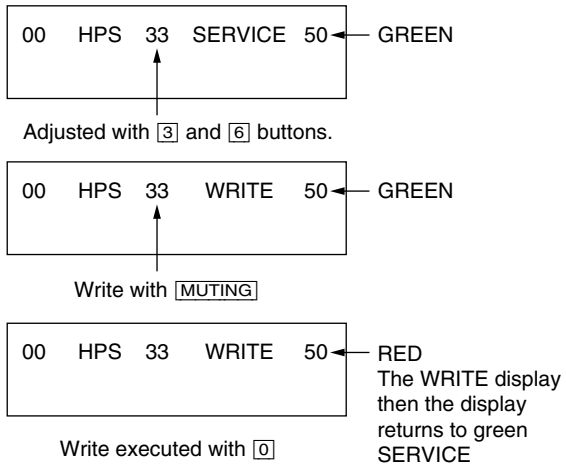
4-2. ADJUSTMENT METHOD

Item Number 00 HPS

This explanation uses H Shift as an example.

1. Select "00 HPS" with the [1] and [4] buttons.
2. Raise/lower the data with the [3] and [6] buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the [MUTING] button. (The display changes to WRITE.)
5. Execute the writing with the [0] button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)

Example on screen display :-


00 HPS 33 SERVICE 50
GREEN
Adjusted with 3 and 6 buttons.
00 HPS 33 WRITE 50
GREEN
Write with MUTING
00 HPS 33 WRITE 50
RED
The WRITE display then the display returns to green SERVICE
Write executed with 0

Use the same method for all Items. Use [1] and [4] to select the adjustment item, use [3] and [6] to adjust, write with [MUTING], then execute the write with [0].

Note : 1. In [WRITE], the data for all items are written into memory together.
2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

Item No.	Adj. Item	Data Range	Initial Data	Note for Different Data	Function	Device
00	HPS	00–3F	24	50/60Hz	H Position	TDA8843/44(8A)
01	HSZ	00–3F	23	50/60Hz	H Size	
02	PAP	00–3F	21	50/60Hz	Pin Amplitude	
03	CPN	00–3F	29	50/60Hz	Corner Pin	
04	TLT	00–3F	20	50/60Hz	Tilt	
05	VSL	00–3F	20	50/60Hz	V Slope	
06	VAP	00–3F	1D	50/60Hz	V Amplitude	
07	SCO	00–3F	20	50/60Hz	S Correction	
08	VPS	00–3F	20	50/60Hz	V Shift	
09	VZM	00–3F	19		Vertical Zoom	
0A	VSC	00–3F	20	50/60Hz	Vertical Scroll	
0B	RDR	00–3F	25	Dynamic/Others	R Drive	
0C	GDR	00–3F	25	Dynamic/Others	G Drive	
0D	BDR	00–3F	25	Dynamic/Others	B Drive	
0E	SBR	00–7F	4B		Sub Brightness	
0F	PMX	00–3F	27	TV/Video/Teletext	Picture Maximum Data	
10	PMI	00–3F	05		Picture Minimum Data	
11	SHU	00–0F	07	TV/Video	Sub Hue	
12	SSH	00–03	01	TV/Video	Sub Sharpness	
13	SC1	00–3F	1F	50/60Hz	Sub Color Lower	
14	SC2	00–3F	0B	50/60Hz	Sub Color Higher	
15	FO	00–03	00	TV/Video/Teletext	01 Time Constant	
16	AGT	00–3F	30	TV/Video/Teletext	AGC Take Over	
17	VSW	00–01	0	TV/Video/Teletext	Video Mute Switch	
18	FOR	00–03	00		Forced Field Frequency	
19	DL	00–01	0		De-interlace	
1A	POC	00–01	0		Fixed 01 Synchro. Mode	
1B	COR	00–01	0	TV/Video/Teletext	Noise Coring	
1C	RBL	00–01	0	TV/Video/Teletext	RGB Blanking	
1D	YDL	00–0F	08	PAL/NTSC/SECAM	Y-Delay	
1E	VP1	00–FF	00		Extra Bits (see page 20)	
1F	VP2	00–FF	01		Extra Bits (see page 20)	
20	VP3	00–FF	08		Extra Bits (see page 20)	
21	WST	00–FF	15		W/G Stereo Threshold	MSP3417G(80)
22	WBT	00–FF	EA		W/G Bilingual Threshold	
23	WLL	00–FF	05		W/G Monaural Threshold	
24	WAC	00–0F	00		W/G Agreement count	
25	WDL	00–FF	30		W/G Search Delay	
26	NDL	00–FF	20		NICAM Search Delay	
27	SDL	00–FF	10		Stereo Status Read Delay	
28	AGC	00–01	01		AGC Switch auto/constant	
29	REL	00–3F	28		AGC Gain at Constant Mode	
2A	CRM	00–01	0		Carrier Muting on/off	
2B	ACO	00–01	1		Audio Clock-out on/off	
2C	FP	00–7F	1B		FM Prescale for B/G, I, D/K	
2D	FPM	00–7F	32		FM Prescale for M	
2E	FH	00–7F	36		FM Prescale for HDEV (non-M)	
2F	FHM	00–7F	65		FM Prescale for HDEV (M)	
30	WGP	00–7F	2A		W/G Prescale	
31	NIP	00–7F	6D		NICAM Prescale	
32	ERR	00–FF	50		Auto FM Switch Threshold	
33	VOL	00–7F	73		DFP Volume Maximum	
34	ING	00–0F	00	M System/non-M/Video	Input Gain	TDA7438(88)
35	VOM	00–3F	01	M System only	Volume Output Gain	
36	BCS	00–03	01		Bass Center Shift	
37	TCS	00–03	01		Treble Center Shift	
38	TXH	00–FF	2D		Horizontal Display Position	SAA5264(58)
39	TXV	00–3F	2A		Vertical Display Position (line offset from V-sync)	
3A	THD	00–7F	00		H-sync Active Edge Shift	
3B	TVD	00–7F	0F		V-sync Active Edge Shift	
3C	HPL	00–01	00	00:Positive, 01:Negative	H-sync Polarity Configuration	
3D	VPL	00–01	00	00:Positive, 01:Negative	V-sync Polarity Configuration	
3E	FPL	00–01	00	00:V-sync second half line, 01:V-sync first half line	Field Polarity Configuration	
3F	FMD	00–03	02	00:Auto, 01:Default, 02:Fastext, 03:Top mode	Force Mode	

Adjustment Item Table

Item No.	Adj. Item	Data Range	Initial Data	Note for Different Data	Function	Device
40	TBR	00-0F	08		Set Teletext RGB Brightness	SAA5264(58)
42	TCH	00-03	01		Twisted Character Set Configuration	
43	BKP	00-3F	00	00 : Positive, 01 : Negative	Picture Data at Blanking OFF	
44	ODL	00-FF	10		Power ON Delay	Other Control
45	OSH	00-3F	0A		OSD H Position	
46	TSH	00–03	00	00:B/G, 01:I, 02:D/K, 03:M	TV System at Auto Preset	
47	DKS	00–01	01		D/K Stereo enable/disable	
48	MUT	00–01	00		Muting on/off at No Sync	
49	ABL	00–01	00		Bright ABL Switch	
4A	SCM	00–01	00		SECAM Trap active/inactive	
4B	SLS	00–01	01		Active SL.OR.IFI Sync	
4C	SSV	00–07	02		Space Sound Volume Step Up	
4D	VPW	00–7F	28		Timer of Video Processor start up wait	
4E	OP1	00–FF	2F		Optional Flags 0 (see page 20)	
4F	OP2	00–FF	0F		Optional Flags 1 (see page 20)	
50	OP3	00–FF	00		Optional Flags 2 (see page 20)	

NOTE

- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory.
  In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

ITEM INFORMATION

No. 1E VP1

Item	HCO	EVG	SBL	PRD	HBL	AKB	MAT	VID
KV-PG21P40 (Singapura)	0	0	0	0				0
KV-PG21M70	0	0	0	0				0
KV-PG21P70	0	0	0	0				0
KV-PG21P40 (Malaysia)	0	0	0	0				0
KV-PG21P40 (Malaysia)	0	0	0	0				0

HCO	EHT Tracking Mode 1 = on V and E-W, 0 = only on V	0A(7)
EVG	Enable Vertical Guard 1 = enable, 0 = disable	0A(6)
SBL	Service Blanking 1 = active, 0 = inactive	OB(7)
PRD	Over-voltage Protection Detection 1 = enable, 0 = disable	OB(6)
HBL	RGB Blanking Mode 1 = wide blanking, 0 = normal blanking	02(7)
AKB	Black Current Stabilisation 1 = not active, 0 = active	02(6)
MAT	PAL-SECAM-/NTSC Matrix 1 = PAL matrix. 0 = adapted to standard	0E(7)
VID	Video IdentMode 1 = not for 01-loop, 0 = for 01-loop	09(7)

No. 1E VP1

Item	-	AV Input		AVMUT	B/G	I	D/K	M
KV-PG21P40 (Singapura)	0	0	1	0	1	1	1	1
KV-PG21M70	0	0	1	0	1	1	1	1
KV-PG21P70	0	0	1	0	1	1	1	1
KV-PG21P40 (Malaysia)	0	0	1	0	1	1	1	1
KV-PG21P40 (Malaysia)	0	0	1	0	1	1	1	1

AV Input 00 = no AV Input model 01 = 1 AV Input model
10 = 2 AV Input model 11 = 2AV Input and RGB input model

AVMUT 1 = AV multi is always muted if no signal input, 0 = not muted always

Other optional bits are effective if set ti 1.

No. 20 VP3

Item	No NICAM	-	HDEV	1 V-Curve	XTAL SEL		MAT	VID
KV-PG21P40 (Singapura)	0	0	0	0	1	1	1	0
KV-PG21M70	0	0	0	0	1	1	1	0
KV-PG21P70	0	0	0	0	1	1	1	0
KV-PG21P40 (Malaysia)	0	0	0	0	1	1	1	0
KV-PG21P40 (Malaysia)	0	0	0	0	1	1	1	0

XTAL SEL 00 = only 4.43 XTAL 01 = only 3.58 XTAL
10 = not used 11 = both 4.43 and 3.58 XTAL

1 V-Curve (for monaural model)
1 = using common volume curve for every mode and every TV system
0 = another volume curve available for video mode and M system

HDEV 1 = High Deviation Mode switch available, 0 = not available

No NICAM 1 = NICAM search is disable in any TV system, 0 = NICAM search operates

Other optional bits are effective if set to 1.

No. 4E OP1

Item	Pic. Rot	Auto TV Sys.	No Bal.	SPC SOUND	-	VM	H. K. Bil	Thai Bil.
KV-PG21P40 (Singapura)	0	0	0	1	0	0	0	0
KV-PG21M70	0	0	0	1	0	0	0	0
KV-PG21P70	0	0	0	1	0	0	0	0
KV-PG21P40 (Malaysia)	0	0	0	1	0	0	0	0
KV-PG21P40 (Malaysia)	0	0	0	1	0	0	0	0

Auto TV Sys. 1 = Auto TV System available, 0 = not available
No. Bal.(for AVstereo model 1 = no balance in analog select items, 0 = balance included
Pic. Rot 1 = Pic Rotation available, 0 = not available
SPC SOUND 1 = Space Sound available, 0 = not available
Other optional bits are effective if set to 1.

OPERATION GUIDE

SERVICE MODE

How to set up new NVM (or initialize already written one)
(1) AC ON
(2) Enter Service Mode - describing below how to enter
(3) Push the commander button “5” and “0” sequentially (only set initial data into RAM, but not write them into NVM yet)
(4) Push the commander button “2” and “0” sequentially (copy the data into all NVM area - all wide modes and 50/60Hz respectively)
(5) Push the commander button “8” and “0” sequentially (initialize user data, select program 1 and exit Service Mode)
(6) Select TV system and execute Auto Preset

How to enter Service Mode
- At power ON, push the commander button “test” and “TV ON” sequentially
- At stand-by, push the commander button “display”, “5”, “vol +” and “power” sequentially

How to exit Service Mode
- Push the commander button “other ON” or power (AC) OFF

How to increment/decrement items and data
- Items : push the commander button “1” / “4”
- Data : push the commander button “3” / “6” (not write into NVM)

Other operations
- Write data into NVM - push the commander button “mute” and “0” sequentially
- Read data from NVM - push the commander button “7” and “0” sequentially
- Copy 50Hz data into 60Hz area - push the commander button “display” and “0” sequentially

SELF DIAGNOSIS MODE

How to enter Self Diagnosis Mode
- At stand-by, push the commander button “display”, “5”, “vol-” and “power” sequentially

How to exit Self Diagnosis Mode
- Push the commander button “other ON” or power (AC) OFF

Other operations
- Clear data and Write into NVM - push the commander button “8” and “0” sequentially

HOTEL TV MODE

How to enter Hotel TV Mode ON stage
- At stand-by, push the commander button “display”, “MUTE”, “vol +” and “power” sequentially
- The Hotel TV setup display, where the maximum level of the volume can be applied (=35 or above)
- Write data into NVM - push the commander button “mute” and “0” sequentially

How to enter Hotel TV Mode OFF stage
- At stand-by, push the commander button “display”, “MUTE”, “vol -” and “power” sequentially
- Write data into NVM - push the commander button “mute” and “0” sequentially

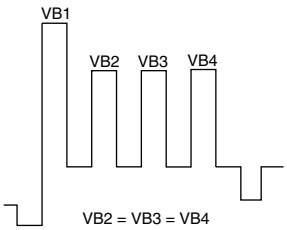
Modification Note

The item including the new addition is yellow.

4-3. PICTURE QUALITY ADJUSTMENT

SUB COLOR ADJUSTMENT

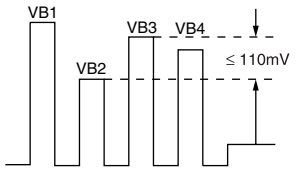
1. Select Video.
2. Input a PAL color-bar.
3. Set to the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN300, A board.
5. Set to Service Mode and select 13 'SC1' with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
6. Press [MUTING] → [0] of the commander to write the data.
7. Adjust 13 'SC1' as step 2 to 5 when receiving NTSC color-bar.



VB2 = VB3 = VB4 (Difference is within 70mV)

SUB HUE ADJUSTMENT

1. Select Video.
2. Input a NTSC 3.58, color-bar into Video/TV mode.
3. Set the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN300, A board.
5. Select 11"SHU" with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6] .



VB1 = VB2 = VB3 = VB4

   The highest level of VB1,VB2,VB3,VB4 must be aligned at the same line. Ideal difference level between VB2 and VB3 should be within ± 110mV.
6. Press [MUTING] → [0] of the commander to write the data.
7. Select TV channel with NTSC 3.58 and repeat 3 to 5.
8. Press [MUTING] → [0] of the commander to write the data.
9. Single system model with NTSC 4.43, select TV channel with NTSC 4.43 and repeat 3 to 5.

4-4. DEFLECTION ADJUSTMENT

NORMAL MODE (50Hz)

1. Set to Service mode.
2. Input PAL color bar.
3. Using the [1] and [4] button, select category GEO (Service Mode).
4. Raise/lower the data using the [3] and [6] buttons.
   Select and adjust the following items to obtain optimum image.

Service Item

GEO :	00	HPS	H POSITION
	01	HSZ	H SIZE
	02	PAP	PIN AMPLITUDE
	03	CPN	CORNER PIN
	04	TLT	TLT
	05	VSL	V SLOPE
	06	VAP	VERTICAL AMPLITUDE
	07	SCO	S CORRECTION
	08	VPS	V SHIFT

NORMAL MODE (60Hz)

5. Input 525/60Hz signal.
6. Using the [1] and [4] buttons select category GEO (Service Mode).
7. Select and adjust the following items to obtain obtimum image.
   Raise/lower the data with the [3] and [6] buttons.

Service Item

GEO :	00	HPS	H POSITION
	01	HSZ	H SIZE
	02	PAP	PIN AMPLITUDE
	03	CPN	CORNER PIN
	04	TLT	TILT
	05	VSL	V SLOPE
	06	VAP	VERTICAL AMPLITUDE
	07	SCO	S CORRECTION
	08	VPS	V SHIFT

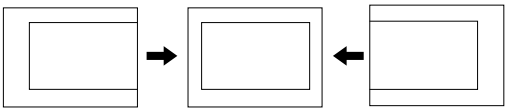
4-5. A BOARD AJUSTMENT AFTER IC003 (MEMORY) REPLACEMENT

1. Enter to Service Mode.
2. Press commander buttons [5] and [0] (Data Initialize), and [2] and [0] (Data Copy) to initialize the data.
3. Call each item number and check if the respective screen shows the normal picture.
   In cases where items are not well adjusted, rectify the fine adjustment.
   Write the data per each item number ([MUTING] +[0]).
4. Select item numbers 4E 'OP0', 4F 'OP1', 50 'OP2' and respectively set the bit per model with command buttons [3] and [6] .
5. Press commander buttons [8] and [0] (Test Normal) to return to the data that was set on the shipment from the factory. (This will also cancel Service Mode.)

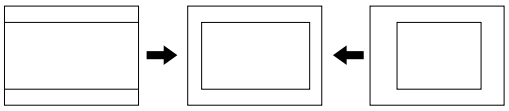
4-6. PICTURE DISTORTION ADJUSTMENT

Item Number 00 – 08

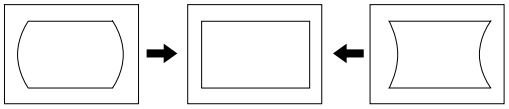
00 HPS (H POSITION)



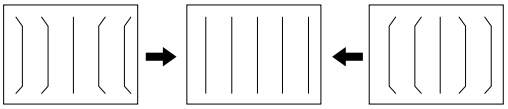
01 HSZ (H SIZE)



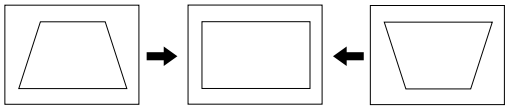
02 PAP (PIN AMPLITUDE)



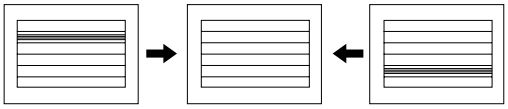
03 CPN (CORNER PIN)



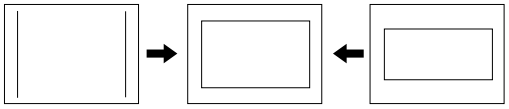
04 TLT (TILT)



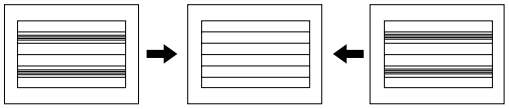
05 VSL (V SLOPE)



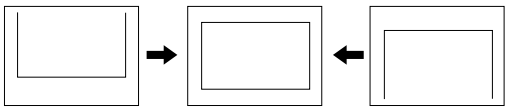
06 VAP (VERTICAL AMPLITUDE)



07 SCO (S CORRECTION)



08 VPS (V SHIFT)

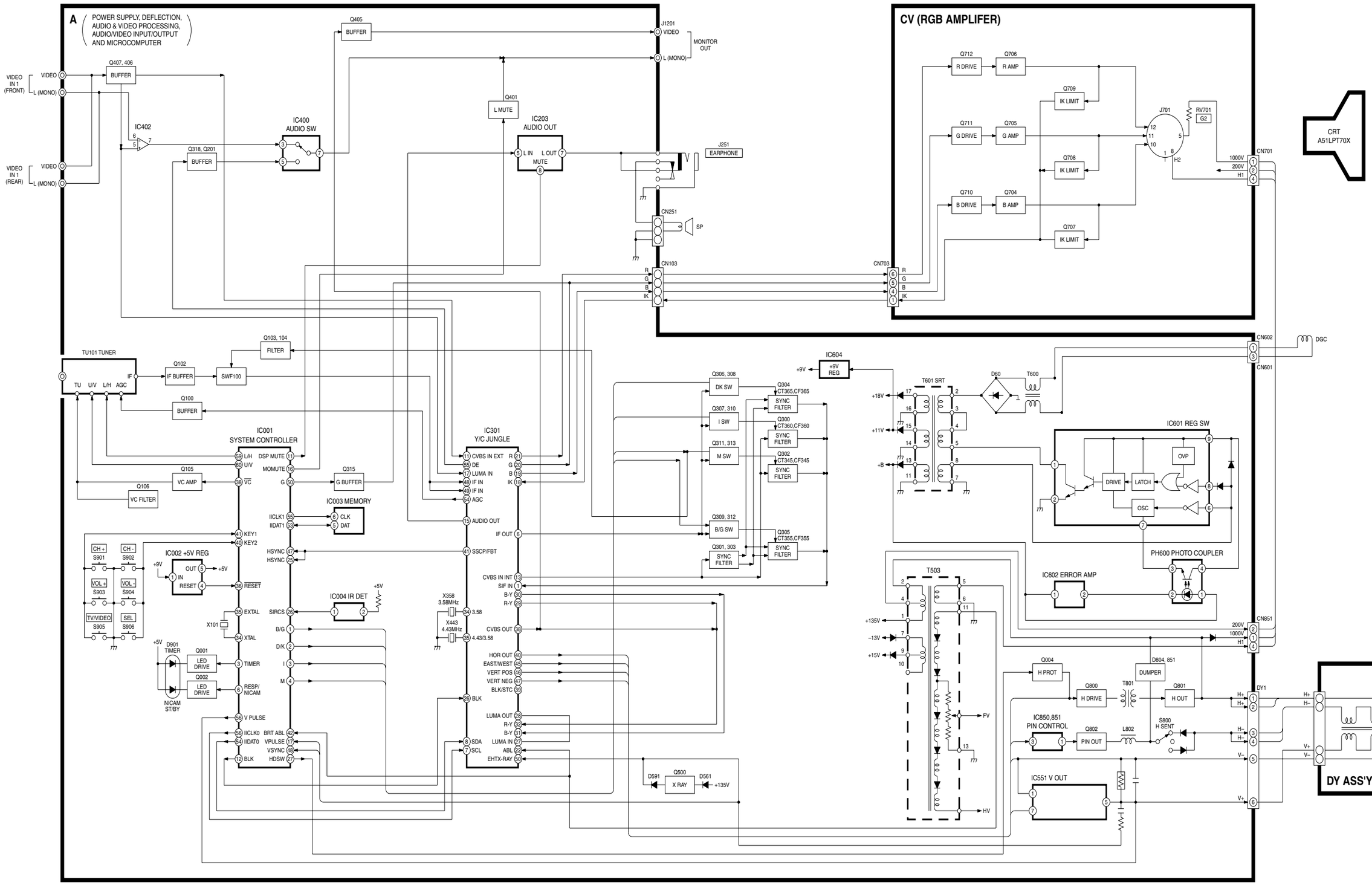


MEMO

KV-PG21P40/PG21M70/PG21P70
RM-952

SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM



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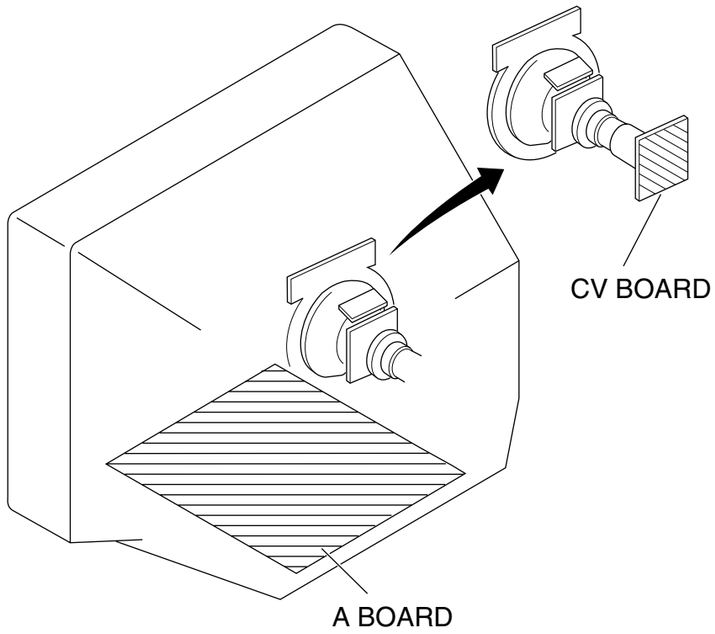
5-2. CIRCUIT BOARDS LOCATION



5-3. SCHEMATIC DIAGRAM

Note:

- All capacitors are in µF unless otherwise noted.
- All electrolytic capacitors are rated at 50V unless otherwise noted.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance which does not have rating electrical power is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W (CHIP: 1/10W)

- : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation or adjustment for rrepair.
- All variable and adjustable resistors have characteristic curve B unless otherwise noted.
- **Redings are taken with a color-bar signal input.**
  no mark : COMMON
  ( ) : PAL
  [ ] : NTSC 3.58
- **Readings are taken with a 10 MΩ digital multimeter.**
- **Voltage are dc with respect to ground unless otherwise noted.**
- **Voltage variations may be noted due to normal production tolerances.**
- **All voltage are in Volt.**
- ✻ **: Cannot be measured.**
- **Circled numbers are waveform references.**
- ▬ **: B +bus.**
- ▪ ▪ ▪ **: B –bus.**
- ⇨ **: signal path.**

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ✻	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The component identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

KV-PG21P40/PG21M70/PG21P70
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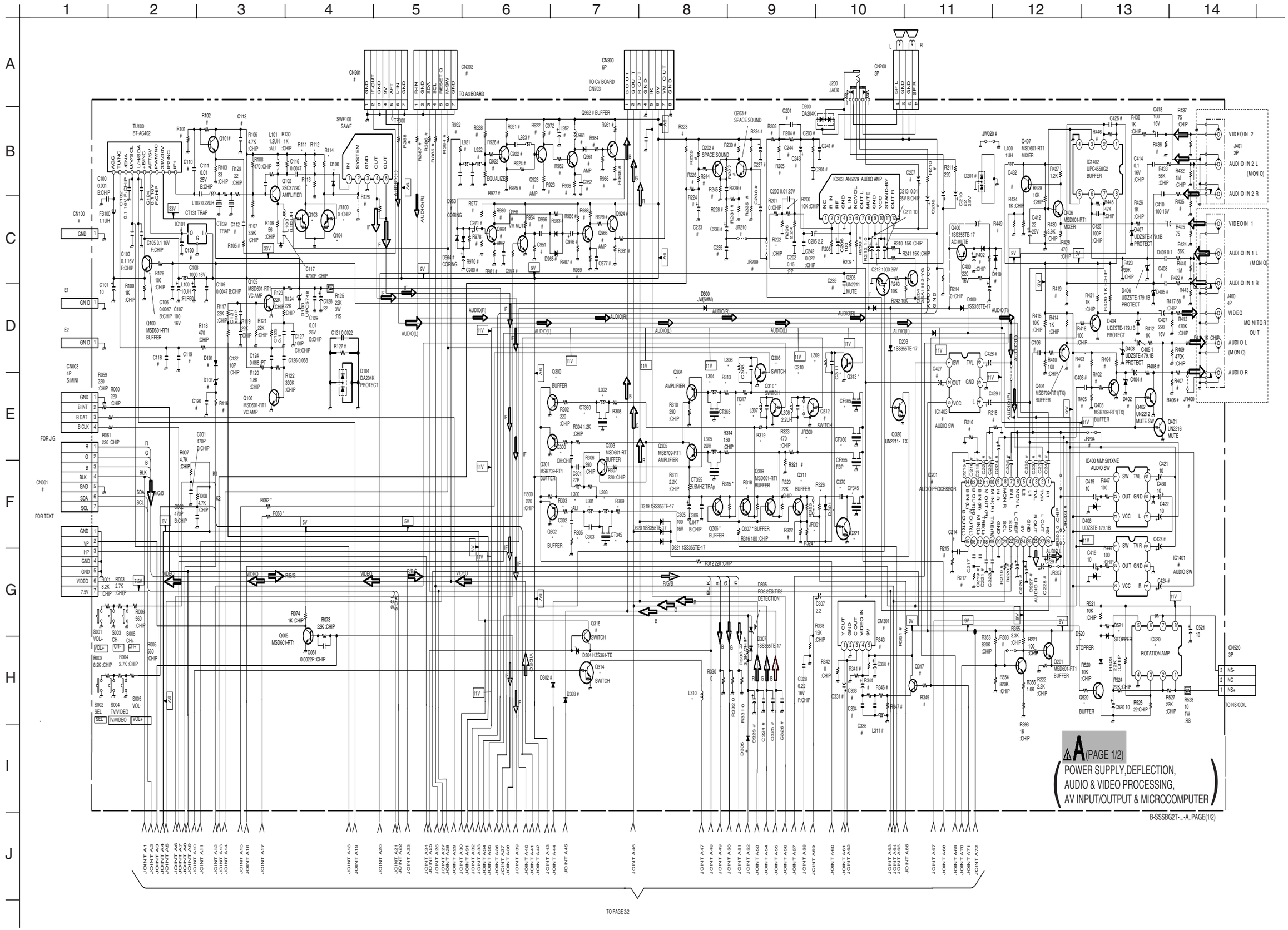
(1) Schematic Diagram of A Board


CN301
CN302
CN300
6P
TO A3 BOARD
TO CV BOARD
CN703
CN200
3P
J200
JACK
TU100
BT-AG402
SWF100
SAWF
IC101
CT131 TRAP
CT139
TRAP
Q100
MSD601-RT1
BUFFER
Q101
Q102
2SC3779C
AMPLIFIER
Q103
Q104
Q105
MSD601-RT1
VC AMP
Q106
MSD601-RT1
VC AMP
D104
DA204K
PROTECT
D100
CN100
FB100
1.1UH
CN003
4P
S-MINI
CN001
FOR JIG
FOR TEXT
S001
VOL+
S002
SEL
S003
CH-
S004
TV/VIDEO
S005
VOL-
S006
CH+
Q300
BUFFER
Q301
MSB709-RT1
BUFFER
Q302
BUFFER
Q303
MSD601-RT
BUFFER
Q304
AMPLIFIER
Q305
MSB709-RT1
AMPLIFIER
Q306
BUFFER
Q307
BUFFER
Q308
SWITCH
Q309
MSD601-RT1
BUFFER
Q310
SWITCH
Q311
BUFFER
Q312
SWITCH
Q313
Q314
SWITCH
Q316
SWITCH
Q320
UN2211- TX
Q321
Q400
1SS355TE-17
AC MUTE
Q401
UN2216
MUTE
Q402
UN2212
MUTE SW
Q404
MSB709-RT1(TX)
BUFFER
Q405
MSB709-RT1(TX)
BUFFER
Q407
MSD601-RT1
MIXER
Q408
MSD601-RT1
MIXER
Q201
MSD601-RT1
BUFFER
Q520
BUFFER
Q205
UN2211
MUTE
IC201
AUDIO PROCESSOR
IC203 AN5279 AUDIO AMP
IC1402
UPC4558G2
BUFFER
IC1403
AUDIO SW
IC400 MM1501XNE
AUDIO SW
IC1401
AUDIO SW
IC520
ROTATION AMP
D200
DA204K
D201
D300
JW5MM
D301
D302
D303
D304 HZS361-TE
D305
D306
RB2.2EG TIB2
DETECTION
D307
1SS355TE-17
D319 1SS355TE-17
D320 1SS355TE-17
D321 1SS355TE-17
D400
1SS355TE-17
D403
1SS355TE-17
D963
CORING
D964
CORING
D408
UDZSTE-179.1B
PROTECT
D409
UDZSTE-179.1B
PROTECT
D406
UDZSTE-179.1B
PROTECT
D520
STOPPER
D521
STOPPER
JW020
JR100
JR200
JR201
JR202
JR203
JR204
JR209
JR210
JR300
JR301
JR303
JR400
JR401
JR402
JR403
JR404
JR405
JR406
JR407
JR408
JR409
JR410
JR411
JR412
JR413
JR414
JR415
JR416
JR417
JR418
JR419
JR420
JR421
JR422
JR423
JR424
JR425
JR426
JR427
JR428
JR429
JR430
JR431
JR432
JR433
JR434
JR435
JR436
JR437
JR438
JR439

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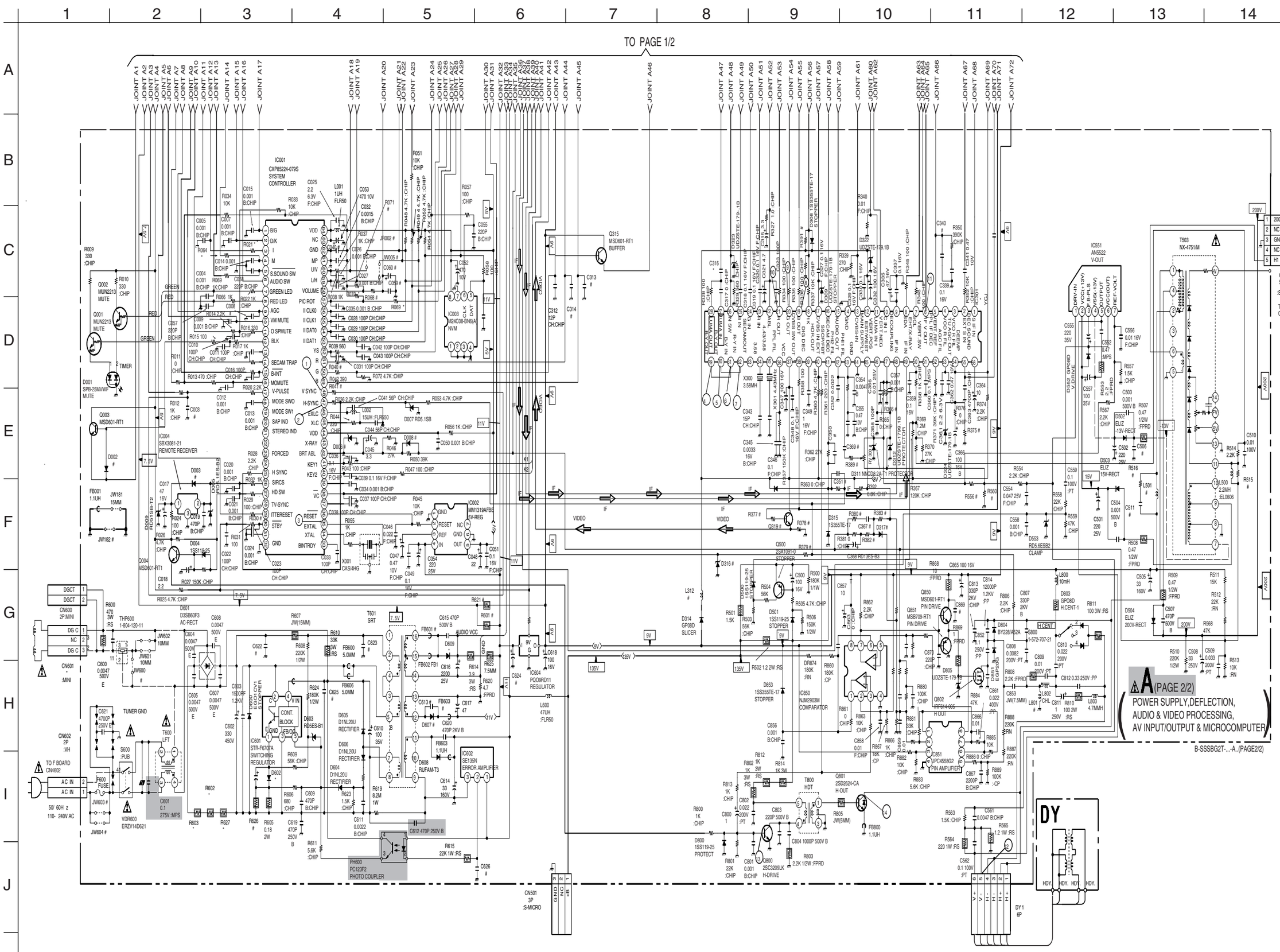
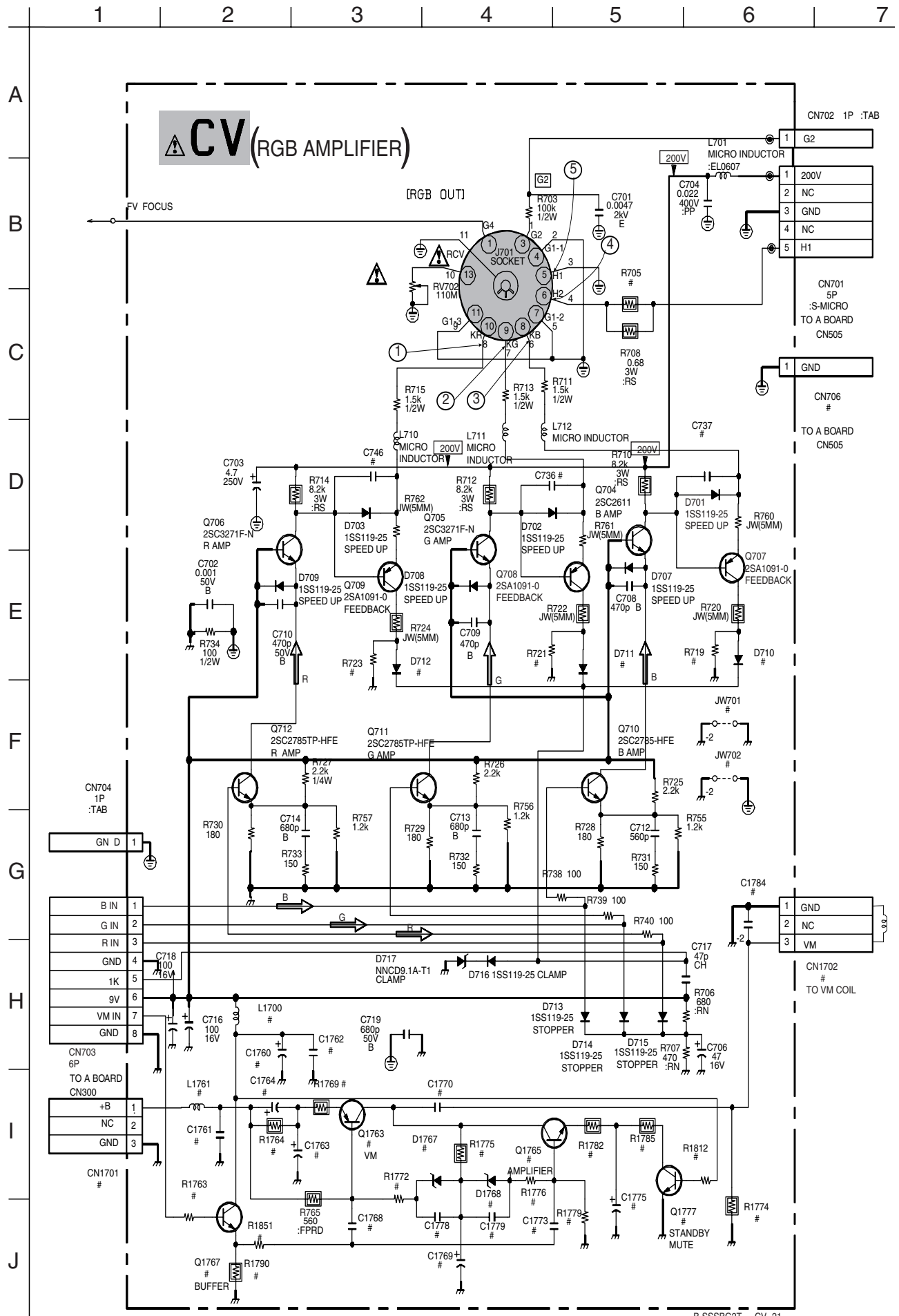


(2) Schematic Diagram of CV Board



A Board ✲ Mark List

	KV-PG21P40 (Malaysia)	PG21P40 (Singapura)	PG21M70	PG21P70
C300	56P :CHIP	56P :CHIP	47P :CHIP	56P :CHIP
C302	#	#	47P :CHIP	#
C303	#	#	68P :CHIP	#
C308	#	#	390P :CHIP	#
C309	#	#	330P :CHIP	#
C311	#	#	470P :CHIP	#
C316	#	#	47P :CHIP	#
C370	#	#	0 :CHIP	#
CF345	#	#	BAND PASS (F4.5C)	#
CF360	#	#	BAND PASS (F6.0C)	#
CF365	#	#	BAND PASS (F6.5C)	#
CN601	2P	3P	3P	3P
CT345	#	#	TRAP CERAMIC (T4.5C)	#
CT360	#	#	TRAP CERAMIC (T60B)	#
CT365	#	#	TRAP CERAMIC (T65B)	#
D100	#	#	MA77	#
D301	#	#	1SS355TE-17	#
D326	1SS355TE-17	1SS355TE-17	#	#
D520	1SS119-25TD	1SS119-25TD	1SS119-25TD	1SS35-5TE-17
D521	1SS119-25TD	1SS119-25TD	1SS119TD	1SS35-5TE-17
D602	S3L20UF4	S3L20UF4	S3L20UF4	ERD28-08S
D609	S3L20UF4	RN4Z	RN4Z	RN4Z
IC301	TDA8843/N2	TDA8843/N2	TDA8844/N2	TDA8843/N2
IC520	NJM4556AD	M5216P	NJM4556AD	M5216P
JR034	#	#	0 :CHIP	#
JR100	0 :CHIP	0 :CHIP	#	0 :CHIP
JR300	0 :CHIP	0 :CHIP	#	0 :CHIP
JR301	#	#	0 :CHIP	#
L300	15UH	15UH	18UH	15UH
L301	#	#	12UH	#
L302	#	#	8.2UH	#
L303	#	#	8.2UH	#
L304	#	#	12UH	#
L306	#	#	1.8UH	#
L307	#	#	2.2UH	#
L309	#	#	2.7UH	#
L310	#	#	27UH	#
Q103	#	#	UN2216	#
Q104	#	#	UN2216	#
Q300	#	#	MSB709-RT1	#
Q302	#	#	MSB709-RT1	#
Q304	#	#	MSB709-RT1	#
Q306	#	#	MSD601-RT1	#
Q307	#	#	MSD601-RT1	#
Q308	#	#	UN2216	#
Q310	#	#	UN2216	#
Q311	#	#	MSD601-RT1	#
Q313	#	#	UN2216	#
Q314	#	#	UN2211	#
Q321	#	#	UN2216	#
Q520	2SC3311A-QRSTA	2SC3311A-QRSTA	2SC3311A-QRSTA	MSD601-RT1
R021	#	#	1.0K :CHIP	#
R062	#	#	1.0K :CHIP	#
R063	#	#	1.0K :CHIP	#
R064	#	#	1.0K :CHIP	#
R069	1.0K :CHIP	1.0K :CHIP	#	1.0K :CHIP
R070	4.7K :CHIP	4.7K :CHIP	#	4.7K :CHIP
R076	100 :CHIP	100 :CHIP	100 :CHIP	#
R111	#	#	10K :CHIP	#
R112	#	#	6.8K :CHIP	#
R113	#	#	2.2K :CHIP	#
R114	#	#	2.2K :CHIP	#
R202	22K :CHIP	#	#	#
R209	10K :CHIP	10K :CHIP	10K :CHIP	#
R301	#	#	220 :CHIP	#
R303	#	#	220 :CHIP	#
R305	#	#	680 :CHIP	#
R308	#	#	120 :CHIP	#
R309	#	#	150 :CHIP	#
R313	#	#	330 :CHIP	#
R315	#	#	22K :CHIP	#
R317	#	#	470 :CHIP	#
R318	#	#	22K :CHIP	#
R319	#	#	470 :CHIP	#
R324	#	#	470 :CHIP	#
R325	#	#	22K :CHIP	#
R326	#	#	22K :CHIP	#
R522	10K :CHIP	10K :CHIP	22K :CHIP	10K :CHIP
R602	1 :10W	0.68 :10W	0.68 :10W	0.68 :10W
R603	1 :10W	0.68 :10W	0.68 :10W	0.68 :10W
R627	1 :10W	0.68 :10W	0.68 :10W	0.68 :10W

Note: The parts indicated as "#" in this circuit diagram are not listed here, as they are not used for these models.

5-4. VOLTAGE MEASUREMENT

A(1/2) BOARD VOLTAGE LIST

Ref	Pin No	Voltage[v]
IC001	1	4.9
	2	0
	3	0
	4	0
	5	4.9
	6	(0) [4.8]
	7	0
	8	0
	9	4.9
	10	4.8
	11	0
	12	0
	13	0
	14	4.8
	15	4.9
	16	0
	17	0
	18	0
	19	(0.3) [0]
	20	0
	21	0
	22	0
	23	0
	24	0
	25	0.3
	26	4.0
	27	0
	28	0
	29	0
	30	4.9
	31	4.9
	32	0
	33	(0) [4.9]
	34	(0) [2.3]
	35	2.2
	36	4.9
	37	0
	38	(3.2) [4.8]
	39	0
	40	4.9
	41	4.9
	42	0
	43	0.3
	44	4.9
	45	4.9
	46	4.9
	47	(0.3) [0]
	48	0
	49	0
	50	0
	51	0
	52	0
	53	4.9
	54	4.8
	55	4.9
	56	4.8
	57	4.9
	58	(1.9) [2.1]
	59	8.8
	60	(0.2) [8.8]
	61	0
	62	0
	63	4.9
	64	4.9
IC002	1	0
	2	(4.9) [0]
	3	(4.8) [0]
	4	(15.5) [0]
	5	(4.9) [0]
	6	0
	7	0
IC003	1	0
	2	0
	3	0
	4	0
	5	(4.9) [0]
	6	(4.9) [0]
	7	0
	8	(4.9) [1.0]
IC004	1	4.8
	2	3.9
	3	0
IC101	I	*
	G	*
	O	*
IC203	1	0
	2	0
	3	15.6
	4	0
	5	0
	6	0
	7	7.4
	8	1.0
	9	0
	10	(16.7) [0]
	11	(8.3) [16.7]
	12	(0) [8.3]
IC400	1	0
	2	4.4
	3	8.9
	4	0
	5	0
	6	5.1
IC1401	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
IC520	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	15.5
IC601	1	0.8
	2	(0.4) [1.3]
	3	(157) [171]
	4	11.0
	5	0
IC602	1	115
	2	(135) [0.01]
	3	(0) [135]
IC604	1	(0) [15.5]
	2	8.9
	3	0
	4	4.9
IC850	1	0.8
	2	0.8
	3	1.5
	4	0
	5	2.6
	6	1.6
	7	7.4
	8	8.9
PH600	1	134
	2	133
	3	3.6
	4	17.5
IC301	1	0.4
	2	3.7
	3	0
	4	0
	5	2.4
	6	(3.0) [1.5]
	7	4.8
	8	4.8
	9	6.6
	10	1.1
	11	3.4
	12	8.1
	13	(3.8) [3.3]
	14	0
	15	3
	16	0
	17	3.8
	18	7.6
	19	2.4
	20	2.3
	21	2.6
	22	0
	23	(0) [3.4]
	24	0
	25	0
	26	0
	27	2.7
	28	2.7
	29	2.3
	30	2.3
	31	2.3
	32	2.3
	33	0.3
	34	2.4
	35	2.4
	36	4.8
	37	8.1
	38	2.4
	39	4.9
	40	1.5
	41	0.6
	42	2.9
	43	(3.9) [4.4]
	44	0
	45	(3.1) [2.5]
	46	1.3
	47	1.4
	48	4.6
	49	4.6
	50	1.5
	51	3.6
	52	3.8
	53	(4.4) [5.7]
	54	(3.8) [0.2]
	55	(2.9) [0]
	56	3.4

A(2/2) BOARD VOLTAGE LIST

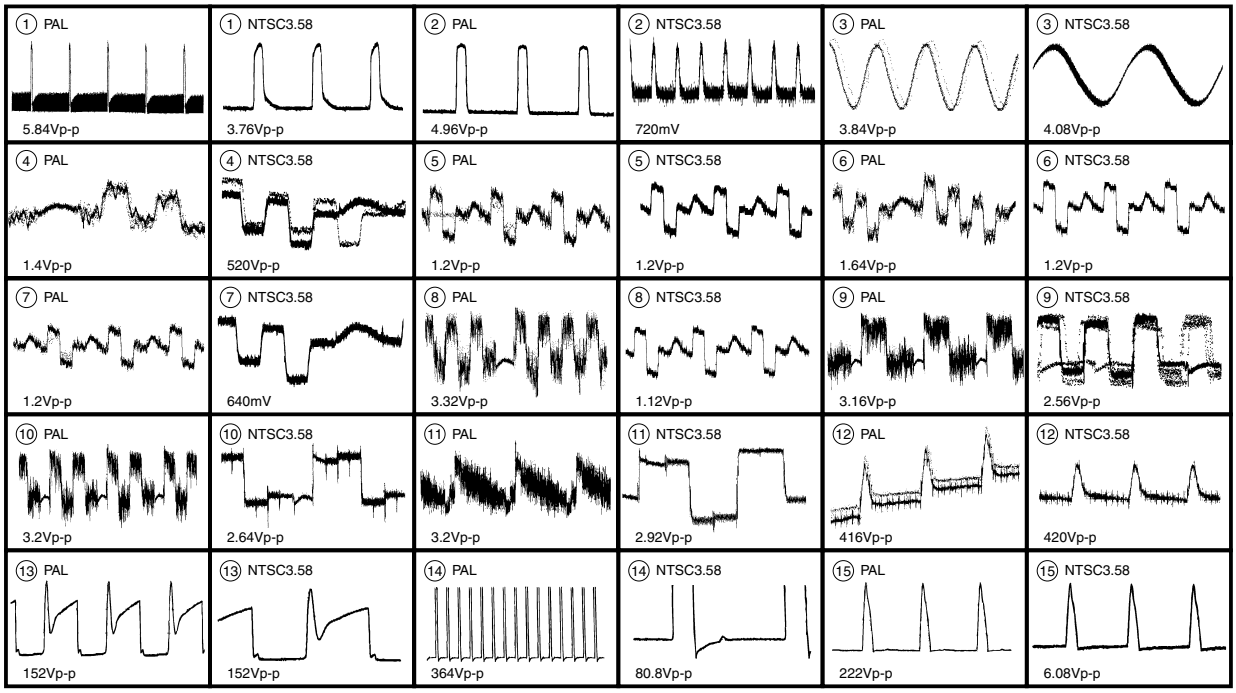
Ref	Pin No	Voltage[v]
IC551	1	0.5
	2	13.3
	3	(12.1) [0]
	4	13.3
	5	(1.2) [0.3]
	6	13.5
	7	0.5
SWF100	1	0
	2	0
	3	0
	4	4.7
	5	4.7
Q001	B	0
	C	4.9
	E	0
Q002	B	0
	C	4.9
	E	0
Q003	B	*
	C	*
	E	*
Q004	B	0.1
	C	4.9
	E	0.1
Q100	B	(8.1) [0.2]
	C	8.9
	E	(7.5) [0]
Q101	B	*
	C	*
	E	*
Q102	B	3.7
	C	8.9
	E	3.1
Q103	B	*
	C	*
	E	*
Q104	B	*
	C	*
	E	*
Q105	B	0.6
	C	(6.6) [0]
	E	0
Q106	B	0.6
	C	4.1
	E	0
Q200	B	0
	C	0
	E	0
Q201	B	6
	C	8.9
	E	5.3
Q202	B	0
	C	0
	E	0
Q203	B	0
	C	0
	E	0
Q300	B	*
	C	*
	E	*
Q302	B	*
	C	*
	E	*
Q303	B	*
	C	*
	E	*
Q304	B	*
	C	*
	E	*
Q307	B	(2.9) [1.5]
	C	8.9
	E	(2.3) [0.9]
Q308	B	*
	C	*
	E	*
Q309	B	2.9
	C	0
	E	0
Q310	B	*
	C	*
	E	*
Q313	B	*
	C	*
	E	*
Q314	B	4
	C	0
	E	0
Q315	B	0
	C	8.9
	E	2.2
Q316	B	0
	C	0
	E	0
Q318	B	2.9
	C	6
	E	2.4
Q319	B	0
	C	8.1
	E	0
Q400	B	15.5
	C	0
	E	15.5
Q401	B	0
	C	0
	E	0
Q402	B	0
	C	0
	E	0
Q403	B	0.3
	C	0
	E	0
Q404	B	4.5
	C	0
	E	5.2
Q405	B	2.4
	C	8.9
	E	1.8
Q406	B	2.4
	C	(4.1) [5.0]
	E	1.8
Q407	B	5.0
	C	8.9
	E	4.3
Q408	B	3.5
	C	8.9
	E	2.9
Q409	B	0
	C	0
	E	0
Q500	B	133.5
	C	0
	E	133.5
Q800	B	0.1
	C	51.6
	E	0
Q801	B	0
	C	0
	E	0
Q802	B	(6.0) [-94.3]
	C	7
	E	0
Q850	B	7.4
	C	8.9
	E	7.0
Q851	B	7.4
	C	0
	E	7.0
Q852	B	6.7
	C	8.9
	E	6.1
Q853	B	0.3
	C	6.9
	E	0
Q854	B	0.9
	C	0.8
	E	0
Q922	B	*
	C	*
	E	*
Q923	B	*
	C	*
	E	*
Q924	B	*
	C	*
	E	*
Q954	B	*
	C	*
	E	*
Q956	B	*
	C	*
	E	*
Q961	B	*
	C	*
	E	*
Q962	B	*
	C	*
	E	*
Q966	B	*
	C	*
	E	*

CV BOARD VOLTAGE LIST

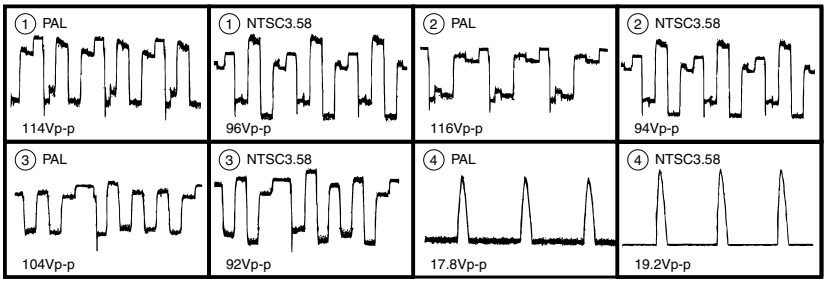
Ref	Pin No	Voltage[v]
J701	G2	(135) [142]
	G1-1	0
	H1	0
	H2	0
	G1-2	0
	KB	133
	KG	(125) [145]
	KR	129
	G1-3	0
	E	0
Q705	B	8.9
	C	(144) [148]
	E	8.3
Q704	B	8.9
	C	137
	E	8.3
Q706	B	8.9
	C	(128) [132]
	E	8.3
Q707	B	136
	C	7.6
	E	132
Q708	B	(143) [146]
	C	7.0
	E	144
Q709	B	(127) [131]
	C	7.0
	E	128
Q710	B	2.5
	C	8.3
	E	1.8
Q711	B	2.3
	C	8.3
	E	1.6
Q712	B	2.6
	C	8.3
	E	1.9
Q1763	B	0
	C	0
	E	0
Q1765	B	0
	C	0
	E	0
Q1767	B	0
	C	0
	E	0
Q1777	B	0
	C	0
	E	0

5-5. WAVEFORMS

A BOARD WAVEFORM



CV BOARD WAVEFORM

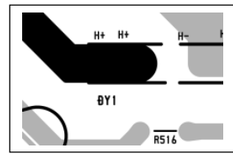


KV-PG21P40/PG21M70/PG21P70
RM-952

5-6. PRINTED WIRING BOARDS AND PARTS LOCATION

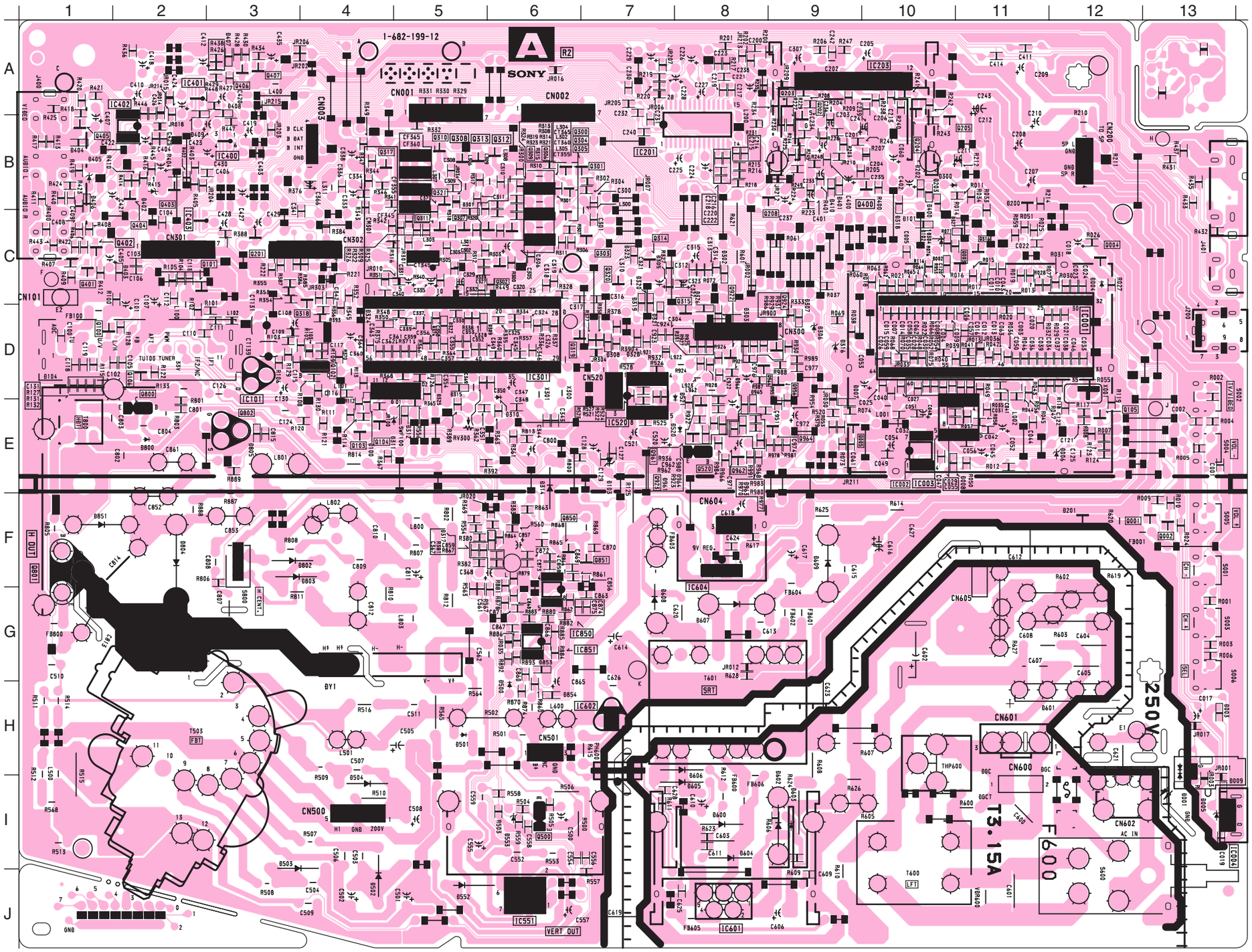
PRINTED WIRING BOARDS

A [POWER SUPPLY,DEFLECTION,
AUDIO AND VIDEO PROCESSING,
AUDIO/VIDEO INPUT/OUTPUT AND MICROCOMPUTER]



NOTE:
The circuit indicated at left contains high voltage of over 1220 Vp-p. Please pay attention when inspecting or repairing it to prevent an electric shock.

– A Board –



A BOARD

IC

IC001	D-12
IC002	F10
IC003	F10
IC004	I-13
IC201	B-7
IC203	A-10
IC301	D-6
IC400	B-3
IC401	A-2
IC402	A-2
IC403	C-2
IC520	E-7
IC551	J-6
IC601	J-8
IC602	H-6
IC604	G-8
IC850	G-6
IC851	G-6
PH600	H-7

TRANSISTOR

Q001	F-12
Q002	F-13
Q003	C-11
Q004	C-12
Q005	E-9
Q100	D-1
Q101	C-2
Q102	D-4
Q103	E-4
Q104	E-4
Q105	E-12
Q106	D-2
Q201	C-3
Q202	A-9
Q203	A-9
Q204	B-10
Q205	B-11
Q300	B-6
Q301	B-7
Q302	C-6
Q303	C-7
Q304	B-6
Q305	B-6
Q306	B-6
Q307	C-5
Q308	B-5
Q309	B-6
Q310	B-5
Q311	C-5
Q312	B-6
Q313	B-5
Q314	C-7
Q315	C-8
Q316	C-11
Q317	B-4
Q318	D-4
Q319	D-6
Q320	C-7
Q321	B-5
Q400	C-10
Q401	C-1
Q402	C-2
Q403	B-2
Q404	C-2
Q405	B-1
Q406	A-3
Q407	A-3
Q500	I-6
Q520	E-8
Q800	D-2
Q801	F-1
Q802	E-3
Q850	F-6
Q851	F-7
Q922	C-8
Q923	E-7
Q924	C-9
Q956	D-9
Q961	E-7
Q962	E-8
Q964	E-9

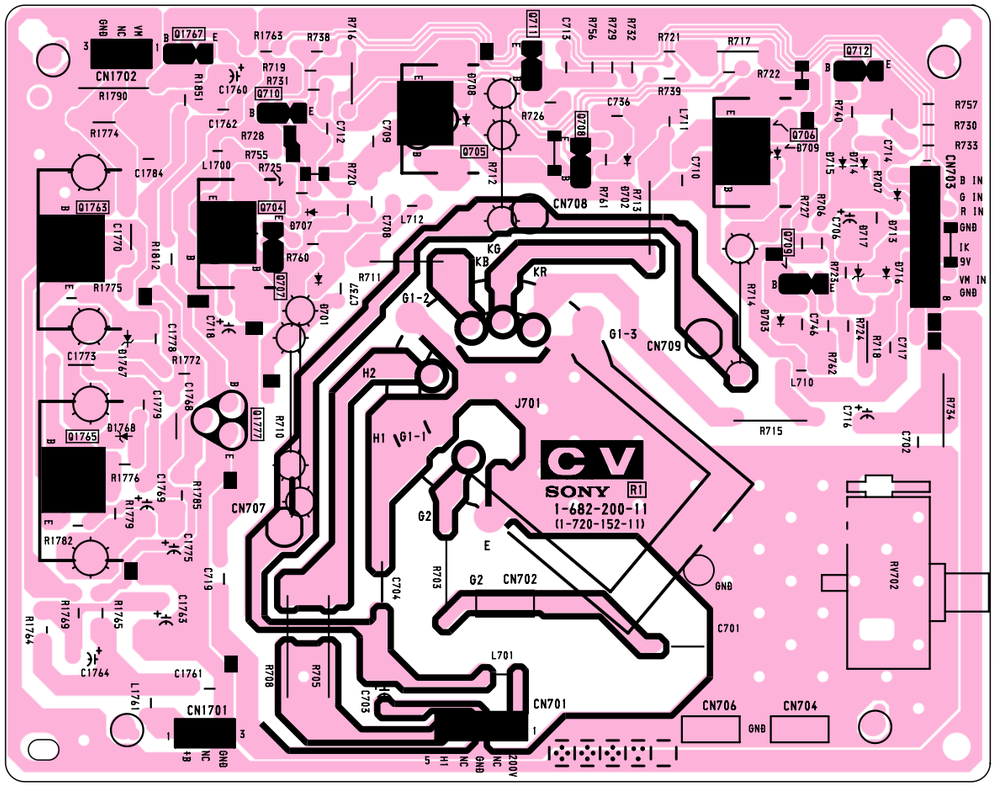
DIODE

D001	I-13
D002	C-10
D003	H-13
D004	C-12
D005	I-13
D006	E-12
D007	D-9
D008	E-11
D009	I-13
D100	E-4
D101	C-10
D102	C-10
D103	E-7
D104	D-1
D200	B-11
D201	F-12
D202	B-10
D203	B-10
D300	B-10
D301	B-5
D302	C-8
D303	D-8
D304	C-10
D305	C-7
D306	D-9
D308	D-7
D309	D-6
D310	E-6
D311	E-4
D312	E-5
D314	E-6
D315	D-5
D316	D-9
D317	F-5
D318	C-10
D319	C-7
D320	C-7
D321	D-7
D323	C-7
D324	D-4
D325	D-5
D326	C-8
D327	C-10
D400	B-10
D401	B-9
D402	B-2
D403	C-2
D404	B-1
D405	B-1
D406	B-1
D407	A-3
D408	A-3
D409	B-2
D410	B-9
D500	H-6
D501	H-5
D502	J-4
D503	I-3
D504	I-4
D520	E-7
D521	D-8
D552	J-5
D553	I-6
D600	I-8
D601	H-11
D602	I-9
D603	I-9
D604	I-8
D605	I-8
D606	I-8
D607	G-8
D608	G-7
D609	F-9
D800	E-2
D802	F-4
D803	F-4
D804	F-2
D805	E-3
D851	F-1
D853	G-6
D961	E-7
D965	D-8
D966	D-8

PRINTED WIRING BOARDS

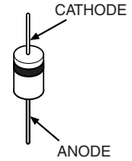
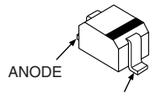
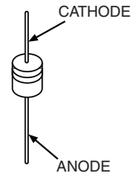
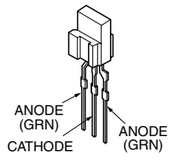
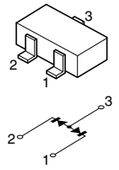
CV [RGB AMPLIFER]

– CV Board –

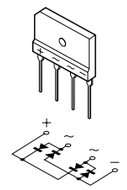
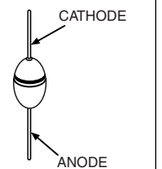
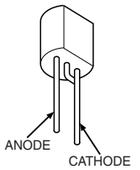
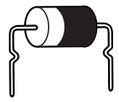
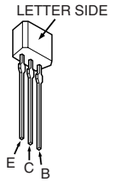


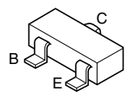
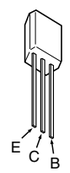
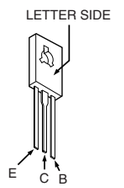
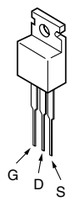
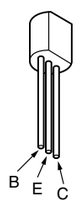
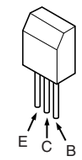
5-7. SEMICONDUCTORS

DIODE

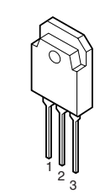
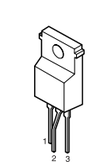
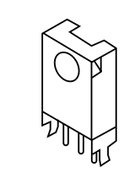
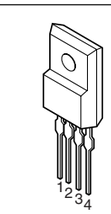
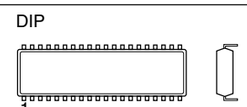
					
D1NL20U ELIZ EG01CV1 GPO8D EGP20G ERD28-08S	NNCD8.2A-T1 NNCD9.1A-T1 RU4AM-T3 1SS119-25 RU3LF-CA NNCD8.2A-T1	RD5.6ESB2 RD5.1SB-T2 UDZSTE-179.1B 1SS355TE-17	RD2.2ES-B2 RD5.1ESB2 RD15ES-B1 S3L20UF4 RD2.2SB-T1	SPB-26MVWF	DA204K

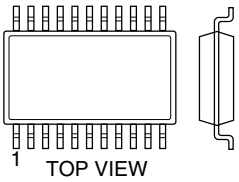
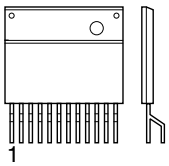
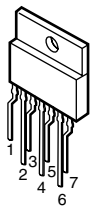
TRANSISTOR

					
D3SB60F3	BY228	UPC574J	RU3LF-C4	RN4Z	2SC2785-HFE 2SC3311A-QRSTA

					
MSD601-RT1 MSB709-RT1 UN2211 UN2213 UN2216 2SA1162-G	2SA1091-0	2SC2611	IRF614-005	2SC3779	2SC3209LK

IC

				
2SD2624-CA	SE-135N	SBX3081-21	PQO9RD11	M24C08-BN6 (A)(8 PIN) M5216P CXP85224A-079S(64 PIN) CXP85224A-080S

SOP  1 TOP VIEW Small Outline L-Leaded Pin 8～98	MARKING SIDE VIEW  1 Zig-zag In -line Package Pin 6～99	 1 2 3 4 5 6 7	
MM1319AFBE UPC455892 NJM2903M	STR-F6707A	AN5522	

SECTION 6
EXPLODED VIEWS

NOTE:

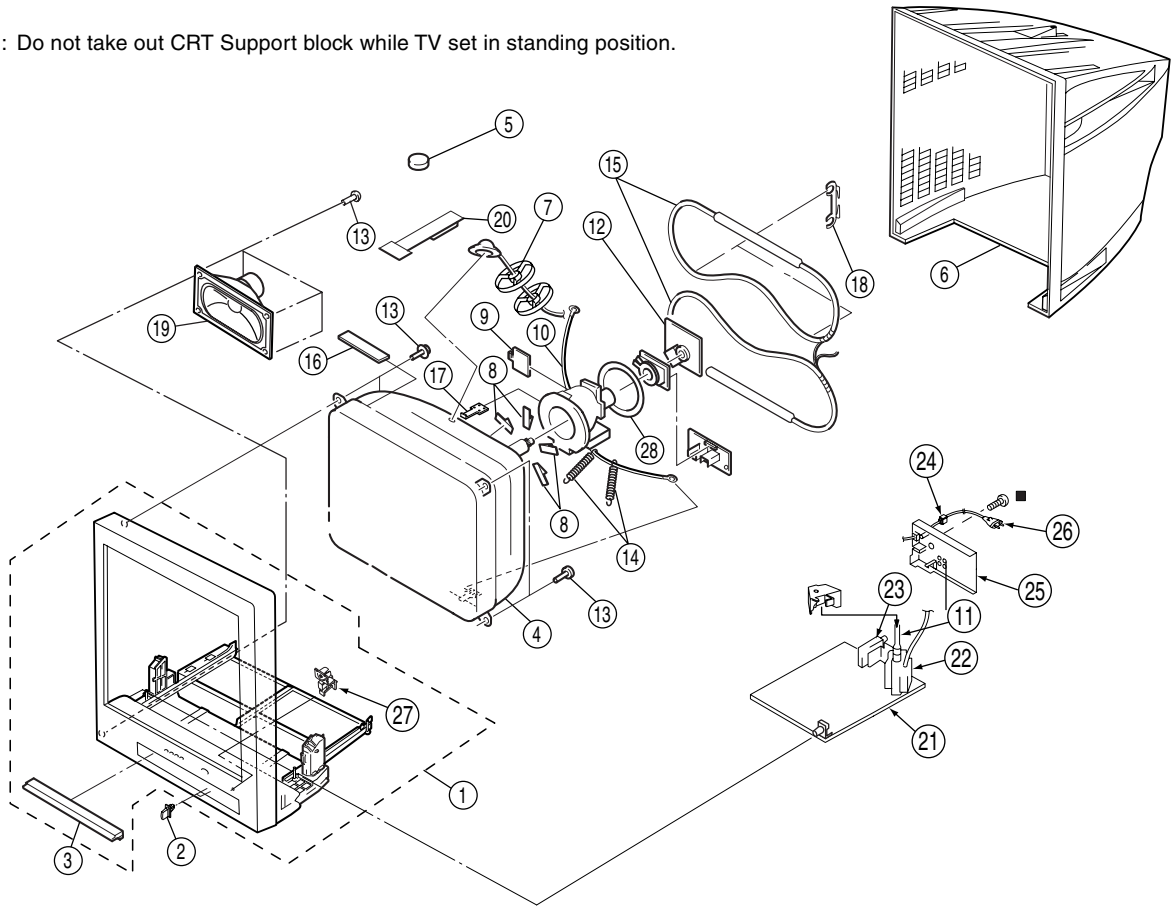
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. PICTURE TUBE AND CHASSIS

● : 7-685-648-79 SCREW +BVTP 3 × 12
■ : 7-685-663-71 SCREW +BVTP 4 × 16

Caution : Do not take out CRT Support block while TV set in standing position.



REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4039-125-1	BEZNET ASSY	3, 28
		X-4039-396-1	BEZNET ASSY (KV-PG21P40/N) (EM)	3, 28
		X-4039-398-1	BEZNET ASSY (KV-PG21P40/L) (EM)	3, 28
2		4-081-868-01	BUTTON POWER	
3		X-4039-301-1	DOOR ASSY, CONTROL (KV-PG21P40) (ES)/(KV-PG21P70) (E)	
		X-4039-345-1	DOOR ASSY, CONTROL (KV-PG21M70) (E)	
		X-4039-397-1	DOOR ASSY (KV-PG21P40/N) (EM)	
		X-4039-399-1	DOOR ASSY, CONTROL (KV-PG21P40/L) (EM)	
4	⚠	8-738-812-05	PICTURE TUBE (A51LPT70X) (KV-PG21P40)	
	⚠	8-738-809-05	PICTURE TUBE (A51LPT70X) (KV-PG21P70/PG21M70)	
5		1-452-032-00	MAGNET DISC	
6		4-081-866-01	COVER REAR (■ 8 SCREW)	
7		3-704-372-11	HOLDER HV CABLE	
8		4-046-600-11	SPACER DY	
9		4-057-714-01	PIECE TLH CONVERGENCE	
10	⚠	8-451-505-11	DEFLECTION YOKE (Y21RSA-S)	
11		1-900-212-58	LEAD ASSY FOCUS	
12	*	A-1332-200-A	CV BOARD MOUNTED	
13		4-365-808-01	SCREW (5) TAPPING	
14		4-078-765-01	SPRING EXTENSION	
15	⚠	1-416-946-11	COIL, DEMAGNETIC	
	⚠	1-419-479-11	COIL, DEGAUSSING (MALAYSIA ONLY)	
16		4-069-652-02	CUSHION (HS BAND)	
17		4-034-272-11	PLATE CORRECTION TLV	
18		4-064-883-03	HOLDER DGC	
19		1-505-547-21	SPEAKER (5 x 9CM) (● 4 SCREW)	
20		4-051-736-42	PIECE A (90) CONV, CORRECT	
21	*	A-1299-573-A	A BOARD COMPLETE (KV-PG21P40) (ES)	
	*	A-1299-608-A	A BOARD COMPLETE (KV-PG21P70) (E)	
	*	A-1299-620-A	A BOARD COMPLETE (KV-PG21P40) (EM)	
	*	A-1299-606-A	A BOARD COMPLETE (KV-PG21M70) (E)	
22	⚠	1-453-329-21	TRANSFORMER ASSY FLYBACK (NX-4751/M3A4)	
23		8-598-591-00	TUNER BT-AG402	
24		4-022-115-00	HOLDER AC CORD	
25		4-059-710-01	BRACKET TERMINAL BOARD (■ 1 SCREW)	
26		1-574-062-11	CORD POWER WITH CONNECTOR	
27	*	4-081-867-01	BAR OPTICAL	
28		1-452-728-41	COIL, NA ROTATION (CRT-154)	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

SECTION 7
ELECTRICAL PARTS LIST

A

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- MF : µF, PF : µµF

COILS
- MMH : mH, UH : µH

REF NO.	PART NO.	DESCRIPTION	REMARK
*	A-1299-620-A	A BOARD COMPLETE (KV-PG21P40 (MALAYSIA)	
*	A-1299-573-A	A BOARD COMPLETE (KV-PG21P40 (SINGAPORE)	
*	A-1299-608-A	A BOARD COMPLETE (KV-PG21P70 (E)	
*	A-1299-606-A	A BOARD COMPLETE (KV-PG21M70 (E)	
		**********	
	1-533-223-11	CLIP, FUSE	
*	4-055-304-01	HOLDER, LED	
	4-082-405-01	HOLDER, FBT	
*	4-374-846-01	COVER, CAPACITOR, CAP TYPE	
	4-382-854-01	SCREW (M3X8), P, SW (+)	
	4-382-854-21	SCREW (M3X14), P, SW (+)	
	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
		<CAPACITOR>	
C001	1-162-962-11	CERAMIC CHIP 470PF 10.00% 50V	
C002	1-162-962-11	CERAMIC CHIP 470PF 10.00% 50V	
C004	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C005	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C006	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C007	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C009	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C010	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C011	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C012	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C013	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C014	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C015	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C016	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C017	1-126-947-11	ELECT 47UF 20.00% 16V	
C018	1-126-961-11	ELECT 2.2UF 20.00% 50V	
C019	1-162-962-11	CERAMIC CHIP 470PF 10.00% 50V	
C020	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C021	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C022	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C023	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C024	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C025	1-135-834-91	CERAMIC CHIP 2.2E+06PF 6.3V	
C026	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C027	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C028	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C029	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C030	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C031	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C032	1-162-965-11	CERAMIC CHIP 0.0015UF 10.00% 50V	
C033	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C034	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C035	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C036	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C037	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C038	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C039	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C041	1-162-924-11	CERAMIC CHIP 56PF 5.00% 50V	
C042	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C043	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C044	1-162-924-11	CERAMIC CHIP 56PF 5.00% 50V	
C045	1-126-962-11	ELECT 3.3UF 20.00% 50V	
C046	1-162-995-11	CERAMIC CHIP 0.022UF 50V	
C047	1-113-619-11	CERAMIC CHIP 0.47UF 10V	
C048	1-126-965-91	ELECT 22UF 20.00% 50V	
C049	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C050	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C051	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C052	1-126-935-11	ELECT 470UF 20.00% 10V	
C053	1-126-935-11	ELECT 470UF 20.00% 10V	
C054	1-104-666-11	ELECT 220UF 20.00% 25V	
C055	1-162-960-11	CERAMIC CHIP 220PF 10.00% 50V	
C056	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C057	1-162-960-11	CERAMIC CHIP 220PF 10.00% 50V	
C058	1-162-960-11	CERAMIC CHIP 220PF 10.00% 50V	
C061	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00% 50V	
C063	1-102-852-91	CERAMIC 47PF 5.00% 50V	
C100	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C101	1-126-964-11	ELECT 10UF 20.00% 50V	
C102	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C103	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C104	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C105	1-163-038-91	CERAMIC CHIP 0.1UF 25V	
C106	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C107	1-126-935-11	ELECT 470UF 20.00% 16V	
C108	1-126-767-11	ELECT 1000UF 20.00% 16V	
C109	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C111	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C115	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C116	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C117	1-162-924-11	CERAMIC CHIP 56PF 5.00% 50V	
C121	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C122	1-162-915-11	CERAMIC CHIP 10PF 0.50PF 50V	
C124	1-130-493-00	MYLAR 0.068UF 5.00% 50V	
C125	1-130-495-00	MYLAR 0.1UF 5.00% 50V	
C126	1-130-493-00	MYLAR 0.068UF 5.00% 50V	
C127	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C128	1-126-965-91	ELECT 22UF 20.00% 50V	
C129	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C131	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00% 50V	
C200	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C202	1-136-167-00	FILM 0.15UF 5.00% 50V	
C205	1-126-961-11	ELECT 2.2UF 20.00% 50V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION		REMARK	
C206	1-126-968-11	ELECT	100UF	20.00%	50V
C209	1-126-942-61	ELECT	1000UF	20.00%	25V
C210	1-128-551-11	ELECT	22UF	20.00%	25V
C211	1-126-964-11	ELECT	10UF	20.00%	50V
C212	1-126-942-61	ELECT	1000UF	20.00%	25V
C213	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C242	1-163-037-11	CERAMIC CHIP	0.022UF	10.00%	50V
C300	1-162-923-11	CERAMIC CHIP (KV-PG21M70)	47PF	5.00%	50V
C300	1-162-924-11	CERAMIC CHIP (EXCEPT KV-PG21M70)	56PF	5.00%	50V
C301	1-162-920-11	CERAMIC CHIP	27PF	5.00%	50V
C302	1-162-923-11	CERAMIC CHIP (KV-PG21M70 ONLY)	47PF	5.00%	50V
C303	1-162-925-11	CERAMIC CHIP (KV-PG21M70 ONLY)	68PF	5.00%	50V
C304	1-119-662-91	CERAMIC CHIP	150PF	1.00%	50V
C305	1-126-933-11	ELECT	100UF	20.00%	16V
C306	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C307	1-126-957-11	ELECT	0.22UF	20.00%	50V
C308	1-163-131-00	CERAMIC CHIP (KV-PG21M70 ONLY)	390PF	5.00%	50V
C309	1-163-263-11	CERAMIC CHIP (KV-PG21M70 ONLY)	330PF	5.00%	50V
C310	1-163-131-00	CERAMIC CHIP	390PF	5.00%	50V
C311	1-162-962-11	CERAMIC CHIP (KV-PG21M70 ONLY)	470PF	10.00%	50V
C312	1-162-916-11	CERAMIC CHIP	12PF	5.00%	50V
C315	1-126-961-11	ELECT	2.2UF	20.00%	50V
C316	1-162-923-11	CERAMIC CHIP (KV-PG21M70 ONLY)	47PF	5.00%	50V
C317	1-216-295-91	SHORT	0		
C318	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C319	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C320	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C321	1-126-963-11	ELECT	4.7UF	20.00%	50V
C323	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C327	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C328	1-164-222-91	CERAMIC CHIP	0.22UF		25V
C329	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C330	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C332	1-126-933-11	ELECT	100UF	20.00%	16V
C335	1-126-947-11	ELECT	47UF	20.00%	16V
C337	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C339	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C341	1-113-619-11	CERAMIC CHIP	0.47UF		10V
C342	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C343	1-162-917-11	CERAMIC CHIP	15PF	5.00%	50V
C344	1-162-917-11	CERAMIC CHIP	15PF	5.00%	50V
C345	1-162-967-11	CERAMIC CHIP	0.0033UF	10.00%	50V
C346	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C347	1-126-933-11	ELECT	100UF	20.00%	16V
C348	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C349	1-164-346-11	CERAMIC CHIP	1UF		16V
C352	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C353	1-107-823-11	CERAMIC CHIP	0.47UF	10.00%	16V
C354	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C355	1-107-823-11	CERAMIC CHIP	0.47UF	10.00%	16V
C356	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C357	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C358	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C359	1-163-038-91	CERAMIC CHIP	0.1UF		25V

REF NO.	PART NO.	DESCRIPTION		REMARK	
C360	1-130-495-00	MYLAR	0.1UF	5.00%	50V
C361	1-135-834-91	CERAMIC CHIP	2.2E+06PF	6.3V	
C362	1-113-619-11	CERAMIC CHIP	0.47UF		10V
C363	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C364	1-126-964-11	ELECT	10UF	20.00%	50V
C366	1-126-933-11	ELECT	100UF	20.00%	16V
C368	8-719-110-37	RD13ES-B3			
C370	1-216-295-91	SHORT	0 (KV-PG21M70 ONLY)		
C400	1-126-934-11	ELECT	220UF	20.00%	16V
C405	1-126-960-11	ELECT	1UF	20.00%	50V
C406	1-115-156-11	CERAMIC CHIP	1UF		10V
C407	1-126-934-11	ELECT	220UF	20.00%	16V
C409	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C410	1-126-933-11	ELECT	100UF	20.00%	16V
C412	1-128-551-11	ELECT	22UF	20.00%	25V
C414	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C418	1-126-933-11	ELECT	100UF	20.00%	16V
C419	1-126-964-11	ELECT	10UF	20.00%	50V
C421	1-126-964-11	ELECT	10UF	20.00%	50V
C422	1-126-964-11	ELECT	10UF	20.00%	50V
C425	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C430	1-126-964-11	ELECT	10UF	20.00%	50V
C435	1-126-934-11	ELECT	220UF	20.00%	16V
C500	1-126-933-11	ELECT	100UF	20.00%	16V
C501	1-104-666-11	ELECT	220UF	20.00%	25V
C502	1-104-666-11	ELECT	220UF	20.00%	25V
C503	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C504	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C505	1-123-024-21	ELECT	33UF		160V
C507	1-102-228-00	CERAMIC	470PF	10.00%	500V
C508	1-107-654-11	ELECT	33UF	20.00%	250V
C509	1-106-379-12	MYLAR	0.033UF	10.00%	200V
C510	1-137-150-11	MYLAR	0.01UF	10.00%	100V
C520	1-126-964-11	ELECT	10UF	20.00%	50V
C521	1-126-964-11	ELECT	10UF	20.00%	50V
C552	1-137-194-81	FILM	0.47UF	5.00%	50V
C554	1-163-035-00	CERAMIC CHIP	0.047UF		50V
C555	1-126-949-11	ELECT	220UF	20.00%	35V
C556	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C557	1-126-948-11	ELECT	100UF	20.00%	35V
C558	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C559	1-106-220-00	MYLAR	0.1UF	10.00%	100V
C561	1-162-968-11	CERAMIC CHIP	0.0047UF	10.00%	50V
C562	1-106-220-00	MYLAR	0.1UF	10.00%	100V
C600	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C601	⚠ 1-115-165-11	FILM	0.1UF	20.00%	275V
C602	1-117-752-11	ELECT(BLOCK)	330UF	20.00%	450V
C603	1-117-623-11	FILM	1500PF	3.00%	1.2KV
C604	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C605	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C606	1-104-666-11	ELECT	220UF	20.00%	25V
C607	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C608	1-161-830-00	CERAMIC	0.0047UF	99%	500V
C609	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V
C610	1-126-948-11	ELECT	100UF	20.00%	35V
C611	1-163-145-00	CERAMIC CHIP	0.0015UF	5.00%	50V
C612	⚠ 1-119-886-51	CERAMIC	470PF	10.00%	250V
C614	1-123-024-21	ELECT	33UF		160V
C615	1-102-228-00	CERAMIC	470PF	10.00%	500V
C616	1-126-943-11	ELECT	2200UF	20.00%	25V

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REF NO.	PART NO.	DESCRIPTION		REMARK	
C617	1-126-967-11	ELECT	47UF	20.00%	50V
C618	1-126-933-11	ELECT	100UF	20.00%	16V
C619	1-119-886-51	CERAMIC	470PF	10.00%	250V
C620	1-162-134-11	CERAMIC	470PF	10.00%	2KV
C621	1-117-703-41	CERAMIC	0.0047UF	99%	250V
C626	1-106-383-00	MYLAR	0.047UF	10.00%	200V
C627	1-102-228-00	CERAMIC	470PF	10.00%	500V
C628	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V
C800	1-126-960-11	ELECT	1UF	20.00%	50V
C801	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C802	1-106-375-12	MYLAR	0.022UF	99%	200V
C803	1-102-244-00	CERAMIC	220PF	10.00%	500V
C804	1-162-318-11	CERAMIC	0.001UF	10.00%	500V
C807	1-162-115-00	CERAMIC	330PF	10.00%	2KV
C808	1-106-365-00	MYLAR	0.0082UF	10.00%	200V
C809	1-107-364-11	MYLAR	0.01UF	10.00%	200V
C810	1-106-375-12	MYLAR	0.022UF	99%	200V
C811	1-107-957-11	ELECT	1UF	20.00%	250V
C812	1-117-665-11	FILM	0.33UF	5.00%	250V
C813	1-162-115-00	CERAMIC	330PF	10.00%	2KV
C814	1-117-646-11	FILM	12000PF	3.00%	1.2KV
C852	1-107-846-11	FILM	0.1UF	5.00%	250V
C856	1-162-964-11	CERAMIC CHIP	0.001UF	10.00%	50V
C857	1-126-964-11	ELECT	10UF	20.00%	50V
C858	1-162-974-11	CERAMIC CHIP	0.01UF		50V
C859	1-162-974-11	CERAMIC CHIP	0.01UF		50V
C860	1-208-834-11	METAL CHIP	150K	0.5%	1/10W
C861	1-130-202-00	FILM	0.022UF	5.00%	400V
C863	1-216-295-91	SHORT	0		
C865	1-126-933-11	ELECT	100UF	20.00%	16V
C866	1-162-974-11	CERAMIC CHIP	0.01UF		50V
C867	1-162-966-11	CERAMIC CHIP	0.0022UF	10.00%	50V
C868	1-162-995-11	CERAMIC CHIP	0.022UF		50V
C869	1-115-339-11	CERAMIC CHIP	0.1UF	10.00%	50V
C870	1-162-960-11	CERAMIC CHIP	220PF	10.00%	50V
C872	1-163-038-91	CERAMIC CHIP	0.1UF		25V
C873	1-162-974-11	CERAMIC CHIP	0.01UF		50V
C874	1-162-974-11	CERAMIC CHIP	0.01UF		50V
C875	1-163-038-91	CERAMIC CHIP	0.1UF		25V
		<FILTER>			
CF345	1-234-684-21	FILTER, BAND PASS (F4.5C) (KV-PG21M70 ONLY)			
CF355	1-234-686-21	FILTER, BAND PASS (F5.5C)			
CF360	1-234-689-21	FILTER, BAND PASS (F6.0C) (KV-PG21M70 ONLY)			
CF365	1-234-691-21	FILTER, BAND PASS (F6.5C) (KV-PG21M70 ONLY)			
		<######### >			
CLP001	4-352-844-01	PIN, LEAD, COATING			
CLP003	4-352-844-01	PIN, LEAD, COATING			
		<CONNECTOR>			
CN003	* 1-508-797-00	PIN, CONNECTOR 4P			
CN200	* 1-564-506-11	PLUG, CONNECTOR 3P			
CN300	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN500	* 1-564-508-11	PLUG, CONNECTOR 5P			
CN520	* 1-564-506-11	PLUG, CONNECTOR 3P			

REF NO.	PART NO.	DESCRIPTION	REMARK
CN600	* 1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
CN601	* 1-573-963-11	PIN, CONNECTOR (PC BOARD) 3P (KV-PG21P40(SINGAPORE)/ PG21P70/PG21M70)	
CN601	* 1-691-134-11	PIN, CONNECTOR (PC BOARD) 2P (KV-PG21P40(MALAYSIA)	
CN602	1-580-843-11	PIN, CONNECTOR (POWER)	
		<TRIMMER>	
CT131	1-767-774-22	TRAP, CERAMIC	
CT139	1-767-775-22	TRAP, CERAMIC	
CT345	1-795-342-21	TRAP, CERAMIC (T4.5C) (KV-PG21M70 ONLY)	
CT355	1-795-343-21	TRAP, CERAMIC (T55B)	
CT360	1-795-344-21	TRAP, CERAMIC (T60B) (KV-PG21M70 ONLY)	
CT365	1-795-345-21	TRAP, CERAMIC (T65B) (KV-PG21M70 ONLY)	
		<DIODE>	
D001	8-719-083-18	DIODE SPB-25MVWF	
D004	8-719-911-19	1SS119-25	
D005	8-719-109-85	RD5.1ESB2	
D007	8-719-159-10	RD5.1SB-T2	
D009	8-719-159-10	RD5.1SB-T2	
D100	8-719-421-40	MA77 (KV-PG21M70 ONLY)	
D103	8-759-157-40	UPC574J	
D104	8-719-914-42	DA204K	
D200	8-719-914-42	DA204K	
D202	8-719-988-61	1SS355TE-17	
D203	8-719-988-61	1SS355TE-17	
D301	8-719-988-61	1SS355TE-17 (KV-PG21M70 ONLY)	
D304	8-719-063-66	HZS361-TE	
D305	8-719-988-61	1SS355TE-17	
D306	8-719-109-54	RD2.2ES-B2	
D307	8-719-988-61	1SS355TE-17	
D308	8-719-988-61	1SS355TE-17	
D309	8-719-069-60	UDZSTE-179.1B	
D310	8-719-911-19	1SS119-25	
D311	8-719-070-15	NNCD8.2A-T1	
D312	8-719-069-60	UDZSTE-179.1B	
D314	8-719-908-03	GP08D	
D315	8-719-988-61	1SS355TE-17	
D318	8-719-988-61	1SS355TE-17	
D319	8-719-988-61	1SS355TE-17	
D320	8-719-988-61	1SS355TE-17	
D321	8-719-988-61	1SS355TE-17	
D322	8-719-069-60	UDZSTE-179.1B	
D323	8-719-069-60	UDZSTE-179.1B	
D324	8-719-069-60	UDZSTE-179.1B	
D325	8-719-069-60	UDZSTE-179.1B	
D326	8-719-988-61	1SS355TE-17 (KV-PG21P40(MALAYSIA/SINGAPORE)	
D327	8-719-988-61	1SS355TE-17	
D400	8-719-988-61	1SS355TE-17	
D401	8-719-988-61	1SS355TE-17	
D403	8-719-069-60	UDZSTE-179.1B	
D404	8-719-069-60	UDZSTE-179.1B	
D406	8-719-069-60	UDZSTE-179.1B	
D407	8-719-069-60	UDZSTE-179.1B	
D408	8-719-069-60	UDZSTE-179.1B	

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REF NO.	PART NO.	DESCRIPTION	REMARK
D500	8-719-911-19	1SS119-25	
D501	8-719-911-19	1SS119-25	
D502	8-719-302-43	EL1Z	
D503	8-719-302-43	EL1Z	
D504	8-719-302-43	EL1Z	
D520	8-719-911-19	1SS119-25 (KV-PG21P40 (MALAYSIA/ SINGAPORE/PG21M70)	
D520	8-719-988-61	1SS355TE-17 (KV-PG21P70)	
D521	8-719-911-19	1SS119-25 (KV-PG21P40 (MALAYSIA/ SINGAPORE/PG21M70)	
D521	8-719-988-61	1SS355TE-17 (KV-PG21P70)	
D552	8-719-908-03	GP08D	
D553	8-719-109-89	RD5.6ESB2	
D600	8-719-030-33	DIODE EG01CV1	
D601	8-719-077-77	D3SB60F3	
D602	8-719-510-73	S3L20UF4 (EXCEPT KV-PG21P70)	
D602	8-719-057-05	ERD28-08S (KV-PG21P70)	
D603	8-719-110-39	RD15ES-B1	
D604	8-719-063-70	D1NL20U	
D605	8-719-063-70	D1NL20U	
D606	8-719-063-70	D1NL20U	
D608	8-719-312-10	RU4AM-T3	
D609	8-719-067-18	RN4Z (KV-PG21P40(SINGAPORE)/ PG21P70(E)/PG21M70)	
D609	8-719-510-73	S3L20UF4 (KV-PG21P40(MALAYSIA ONLY)	
D800	8-719-911-19	1SS119-25	
D802	8-719-908-03	GP08D	
D803	8-719-908-03	GP08D	
D804	8-719-081-00	DIODE BY228/A52A/	
D805	8-719-069-60	UDZSTE-179.1B	
D851	8-719-979-85	EGP20G	
D853	8-719-988-61	1SS355TE-17	
		<CONNECTOR>	
DY1	* 1-580-798-11	CONNECTOR PIN (DY) 6P	
		<FUSE>	
F600	1-532-237-00	FUSE, TIME-LAG (BET) 3.15A/250V	
		<FERRITE BEAD>	
FB001	1-410-397-21	FERRITE 1.1UH	
FB100	1-239-358-21	FILTER, NOISE	
FB602	1-410-397-21	FERRITE 1.1UH	
FB603	1-412-911-31	FERRITE 0UH	
FB800	1-410-397-21	FERRITE 1.1UH	
		<IC>	
IC001	8-752-925-64	IC CXP85224A-079S	
IC002	8-759-371-21	MM1319AFBE	
IC003	8-759-672-78	M24C08-BN6(A)	
IC004	8-742-225-20	IC SBX3081-21	
IC203	6-700-036-01	IC AN5279	
IC301	6-700-146-01	IC TDA8844/N2 (KV-PG21M70)	
IC301	6-700-145-01	IC TDA8843/N2 (EXCEPT KV-PG21M70)	
IC400	6-700-033-01	IC MM1501XNRE	
IC402	8-759-100-96	UPC4558G2	
IC520	8-759-356-16	NJM4556AD (KV-PG21P40(MALAYSIA)/ PG21M70)	

REF NO.	PART NO.	DESCRIPTION	REMARK
IC520	8-759-603-37	M5216P (KV-PG21P40(SINGAPORE)/PG21P70)	
IC551	8-759-835-98	IC AN5522	
IC601	8-749-019-42	IC STR-F6707A	
IC602	8-749-920-61	SE-135N	
IC604	8-759-459-99	PQ09RD11	
IC850	8-759-700-07	NJM2903M	
IC851	8-759-100-96	UPC4558G2	
		<JACK>	
J200	1-770-785-12	JACK	
J400	1-779-849-11	JACK BLOCK, PIN 4P	
J401	1-779-205-11	JACK, PIN 2P	
		<CHIP CONDUCTOR>	
JR001	1-216-295-91	SHORT 0	
JR003	1-216-295-91	SHORT 0	
JR012	1-216-295-91	SHORT 0	
JR013	1-216-295-91	SHORT 0	
JR014	1-216-295-91	SHORT 0	
JR015	1-216-295-91	SHORT 0	
JR017	1-216-295-91	SHORT 0	
JR018	1-216-295-91	SHORT 0	
JR020	1-216-295-91	SHORT 0	
JR030	1-216-295-91	SHORT 0	
JR034	1-216-295-91	SHORT 0 (KV-PG21M70 0NLY)	
JR035	1-216-295-91	SHORT 0	
JR100	1-216-295-91	SHORT 0 (EXCEPT KV-PG21M70)	
JR202	1-216-295-91	SHORT 0	
JR300	1-216-295-91	SHORT 0 (EXCEPT KV-PG21M70)	
JR301	1-216-295-91	SHORT 0 (KV-PG21M70 0NLY)	
JR304	1-216-295-91	SHORT 0	
		<COIL>	
L001	1-414-855-31	INDUCTOR 1UH	
L002	1-414-184-41	INDUCTOR 15UH	
L100	1-414-856-11	INDUCTOR 10UH	
L101	1-410-498-11	INDUCTOR 1.2UH	
L102	1-410-985-42	INDUCTOR 0.22UH	
L103	1-410-987-42	INDUCTOR 0.33UH	
L300	1-410-512-11	INDUCTOR 18UH (KV-PG21M70)	
L300	1-410-511-11	INDUCTOR 15UH (EXCEPT KV-PG21M70)	
L301	1-410-510-11	INDUCTOR 12UH (KV-PG21M70 0NLY)	
L302	1-410-508-11	INDUCTOR 8.2UH (KV-PG21M70 0NLY)	
L303	1-410-508-11	INDUCTOR 8.2UH (KV-PG21M70 0NLY)	
L304	1-410-510-11	INDUCTOR 12UH (KV-PG21M70 0NLY)	
L305	1-410-510-11	INDUCTOR 12UH	
L306	1-410-500-11	INDUCTOR 1.8UH (KV-PG21M70 0NLY)	
L307	1-410-501-11	INDUCTOR 2.2UH (KV-PG21M70 0NLY)	
L308	1-410-501-11	INDUCTOR 2.2UH	
L309	1-410-502-11	INDUCTOR 2.7UH (KV-PG21M70 0NLY)	
L310	1-408-608-31	INDUCTOR 27UH (KV-PG21M70 0NLY)	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF NO.	PART NO.	DESCRIPTION	REMARK
L400	1-414-855-31	INDUCTOR 1UH	
L500	1-408-947-00	INDUCTOR 2.2MH	
L600	1-412-533-21	INDUCTOR 47UH	
L800	1-406-677-11	INDUCTOR 10MH	
L802	1-424-796-11	COIL, HORIZONTAL LINEARITY	
L803	1-414-493-41	INDUCTOR 4.7MH	
		<PHOTO COUPLER>	
PH600	⚠ 8-749-010-64	PC123F2	
		<TRANSISTOR>	
Q001	8-729-421-19	UN2213	
Q002	8-729-421-19	UN2213	
Q003	8-729-010-25	MSD601-RT1	
Q004	8-729-010-25	MSD601-RT1	
Q005	8-729-010-25	MSD601-RT1	
Q100	8-729-010-25	MSD601-RT1	
Q102	8-729-022-54	TRANSISTOR 2SC3779C,D-AA	
Q103	8-729-424-67	UN2216 (KV-PG21M70 0NLY)	
Q104	8-729-424-67	UN2216 (KV-PG21M70 0NLY)	
Q105	8-729-010-25	MSD601-RT1	
Q106	8-729-010-25	MSD601-RT1	
Q201	8-729-010-25	MSD601-RT1	
Q204	8-729-216-22	2SA1162-G	
Q205	8-729-421-22	UN2211	
Q300	8-729-010-05	MSB709-RT1 (KV-PG21M70 0NLY)	
Q301	8-729-010-05	MSB709-RT1	
Q302	8-729-010-05	MSB709-RT1 (KV-PG21M70 0NLY)	
Q303	8-729-010-25	MSD601-RT1	
Q304	8-729-010-05	MSB709-RT1 (KV-PG21M70 0NLY)	
Q305	8-729-010-05	MSB709-RT1	
Q306	8-729-010-25	MSD601-RT1 (KV-PG21M70 0NLY)	
Q307	8-729-010-25	MSD601-RT1 (KV-PG21M70 0NLY)	
Q308	8-729-424-67	UN2216 (KV-PG21M70 0NLY)	
Q309	8-729-010-25	MSD601-RT1	
Q310	8-729-424-67	UN2216 (KV-PG21M70 0NLY)	
Q311	8-729-010-25	MSD601-RT1 (KV-PG21M70 0NLY)	
Q313	8-729-424-67	UN2216 (KV-PG21M70 ONLY)	
Q314	8-729-421-22	UN2211 (KV-PG21M70 ONLY)	
Q315	8-729-010-25	MSD601-RT1	
Q318	8-729-010-25	MSD601-RT1	
Q320	8-729-421-22	UN2211	
Q321	8-729-424-67	UN2216 (KV-PG21M70 ONLY)	
Q400	8-729-010-05	MSB709-RT1	
Q401	8-729-424-67	UN2216	
Q402	8-729-424-67	UN2216	
Q403	8-729-010-05	MSB709-RT1	
Q404	8-729-010-05	MSB709-RT1	
Q405	8-729-010-05	MSB709-RT1	
Q406	8-729-010-25	MSD601-RT1	
Q407	8-729-010-25	MSD601-RT1	
Q500	8-729-200-17	2SA1091-O	
Q520	8-729-423-33	2SC3311A-QRSTA (EXCEPT KV-PG21P70)	
Q800	8-729-140-50	2SC3209LK	
Q801	8-729-055-74	TRANSISTOR 2SD2624-CA	
Q802	8-729-050-48	TRANSISTOR IRF614-005	
Q850	8-729-010-25	MSD601-RT1	
Q851	8-729-010-05	MSB709-RT1	

REF NO.	PART NO.	DESCRIPTION			REMARK
		<RESISTOR>			
R001	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R002	1-216-071-00	RES-CHIP	8.2K	5%	1/10W
R003	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R004	1-216-059-00	RES-CHIP	2.7K	5%	1/10W
R005	1-216-043-91	RES-CHIP	560	5%	1/10W
R006	1-216-043-91	RES-CHIP	560	5%	1/10W
R007	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R008	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R009	1-216-037-00	RES-CHIP	330	5%	1/10W
R010	1-216-037-00	RES-CHIP	330	5%	1/10W
R011	1-216-295-91	SHORT	0		
R012	1-216-049-11	RES-CHIP	1K	5%	1/10W
R013	1-216-041-00	RES-CHIP	470	5%	1/10W
R014	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R015	1-216-025-11	RES-CHIP	100	5%	1/10W
R016	1-216-037-00	RES-CHIP	330	5%	1/10W
R017	1-216-049-11	RES-CHIP	1K	5%	1/10W
R018	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R019	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R020	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R021	1-216-049-11	RES-CHIP (KV-PG21M70)	1K	5%	1/10W
R022	1-216-049-11	RES-CHIP	1K	5%	1/10W
R024	1-216-025-11	RES-CHIP	100	5%	1/10W
R025	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R026	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R027	1-216-101-00	RES-CHIP	150K	5%	1/10W
R028	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R029	1-216-025-11	RES-CHIP	100	5%	1/10W
R031	1-216-025-11	RES-CHIP	100	5%	1/10W
R032	1-216-049-11	RES-CHIP	1K	5%	1/10W
R033	1-216-073-91	RES-CHIP	10K	5%	1/10W
R034	1-216-073-91	RES-CHIP	10K	5%	1/10W
R035	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R036	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R037	1-216-049-11	RES-CHIP	1K	5%	1/10W
R038	1-216-049-11	RES-CHIP	1K	5%	1/10W
R039	1-216-043-91	RES-CHIP	560	5%	1/10W
R042	1-216-039-00	RES-CHIP	390	5%	1/10W
R043	1-216-025-11	RES-CHIP	100	5%	1/10W
R044	1-216-033-00	RES-CHIP	220	5%	1/10W
R045	1-216-073-91	RES-CHIP	10K	5%	1/10W
R046	1-208-816-11	METAL CHIP	27K	0.5%	1/10W
R047	1-216-025-11	RES-CHIP	100	5%	1/10W
R048	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R049	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R050	1-208-820-11	METAL CHIP	39K	0.5%	1/10W
R051	1-216-073-91	RES-CHIP	10K	5%	1/10W
R052	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R053	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R054	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R055	1-216-049-11	RES-CHIP	1K	5%	1/10W
R056	1-216-049-11	RES-CHIP	1K	5%	1/10W
R057	1-216-025-11	RES-CHIP	100	5%	1/10W
R058	1-216-025-11	RES-CHIP	100	5%	1/10W
R059	1-216-033-00	RES-CHIP	220	5%	1/10W
R060	1-216-033-00	RES-CHIP	220	5%	1/10W
R061	1-216-033-00	RES-CHIP	220	5%	1/10W
R062	1-216-049-11	RES-CHIP (KV-PG21M70)	1K	5%	1/10W

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R063	1-216-049-11	RES-CHIP (KV-PG21M70)	1K	5%	1/10W
R064	1-216-049-11	RES-CHIP (KV-PG21M70)	1K	5%	1/10W
R066	1-216-049-11	RES-CHIP	1K	5%	1/10W
R069	1-216-049-11	RES-CHIP (EXCEPT KV-PG21M70)	1K	5%	1/10W
R070	1-216-065-91	RES-CHIP (EXCEPT KV-PG21M70)	4.7K	5%	1/10W
R072	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R073	1-216-081-00	RES-CHIP	22K	5%	1/10W
R074	1-216-049-11	RES-CHIP	1K	5%	1/10W
R076	1-216-025-11	RES-CHIP	100	5%	1/10W
R077	1-216-025-11	RES-CHIP	100	5%	1/10W
R100	1-216-049-11	RES-CHIP	1K	5%	1/10W
R103	1-211-981-11	METAL CHIP	33	0.5%	1/16W
R106	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R107	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R108	1-216-041-00	RES-CHIP	470	5%	1/10W
R109	1-216-019-00	RES-CHIP	56	5%	1/10W
R111	1-216-073-91	RES-CHIP (KV-PG21M70)	10K	5%	1/10W
R113	1-216-057-00	RES-CHIP (KV-PG21M70)	2.2K	5%	1/10W
R114	1-216-057-00	RES-CHIP (KV-PG21M70)	2.2K	5%	1/10W
R115	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R117	1-216-081-00	RES-CHIP	22K	5%	1/10W
R118	1-216-041-00	RES-CHIP	470	5%	1/10W
R119	1-216-081-00	RES-CHIP	22K	5%	1/10W
R120	1-216-055-00	RES-CHIP	1.8K	5%	1/10W
R121	1-216-081-00	RES-CHIP	22K	5%	1/10W
R122	1-216-109-00	RES-CHIP	330K	5%	1/10W
R123	1-216-081-00	RES-CHIP	22K	5%	1/10W
R124	1-216-081-00	RES-CHIP	22K	5%	1/10W
R125	1-215-925-11	METAL OXIDE	22K	5%	3W
R128	1-216-025-11	RES-CHIP	100	5%	1/10W
R129	1-211-977-11	METAL CHIP	22	0.5%	1/16W
R130	1-216-049-11	RES-CHIP	1K	5%	1/10W
R133	1-249-389-11	CARBON	4.7	5%	1/4W
R200	1-216-073-91	RES-CHIP	10K	5%	1/10W
R201	1-216-295-91	SHORT	0		
R206	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R209	1-216-073-91	RES-CHIP	10K	5%	1/10W
R211	1-249-409-11	CARBON	220	5%	1/4W
R212	1-216-049-11	RES-CHIP	1K	5%	1/10W
R214	1-216-295-91	SHORT	0		
R221	1-216-025-11	RES-CHIP	100	5%	1/10W
R222	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R240	1-216-077-91	RES-CHIP	15K	5%	1/10W
R241	1-216-077-91	RES-CHIP	15K	5%	1/10W
R242	1-216-073-91	RES-CHIP	10K	5%	1/10W
R243	1-216-073-91	RES-CHIP	10K	5%	1/10W
R300	1-216-033-00	RES-CHIP	220	5%	1/10W
R301	1-216-033-00	RES-CHIP (KV-PG21M70)	220	5%	1/10W
R302	1-216-033-00	RES-CHIP	220	5%	1/10W
R303	1-216-033-00	RES-CHIP (KV-PG21M70)	220	5%	1/10W
R304	1-216-051-00	RES-CHIP	1.2K	5%	1/10W
R305	1-216-045-00	RES-CHIP (KV-PG21M70)	680	5%	1/10W
R306	1-216-039-00	RES-CHIP	390	5%	1/10W
R307	1-216-033-00	RES-CHIP	220	5%	1/10W
R308	1-216-027-00	RES-CHIP (KV-PG21M70)	120	5%	1/10W
R309	1-216-029-00	RES-CHIP (KV-PG21M70)	150	5%	1/10W
R310	1-216-039-00	RES-CHIP	390	5%	1/10W
R311	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R312	1-216-033-00	RES-CHIP	220	5%	1/10W
R313	1-216-037-00	RES-CHIP (KV-PG21M70)	330	5%	1/10W
R314	1-216-037-00	RES-CHIP	330	5%	1/10W
R315	1-216-081-00	RES-CHIP (KV-PG21M70)	22K	5%	1/10W
R316	1-216-031-00	RES-CHIP	180	5%	1/10W
R317	1-216-041-00	RES-CHIP (KV-PG21M70)	470	5%	1/10W
R318	1-216-081-00	RES-CHIP (KV-PG21M70)	22K	5%	1/10W
R319	1-216-041-00	RES-CHIP (KV-PG21M70)	470	5%	1/10W
R320	1-216-081-00	RES-CHIP	22K	5%	1/10W
R323	1-216-041-00	RES-CHIP	470	5%	1/10W
R324	1-216-041-00	RES-CHIP (KV-PG21M70)	470	5%	1/10W
R325	1-216-081-00	RES-CHIP (KV-PG21M70)	22K	5%	1/10W
R326	1-216-081-00	RES-CHIP (KV-PG21M70)	22K	5%	1/10W
R327	1-216-049-11	RES-CHIP	1K	5%	1/10W
R328	1-216-025-11	RES-CHIP	100	5%	1/10W
R329	1-216-043-91	RES-CHIP	560	5%	1/10W
R330	1-216-295-91	SHORT	0		
R331	1-216-295-91	SHORT	0		
R332	1-216-295-91	SHORT	0		
R333	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R334	1-216-025-11	RES-CHIP	100	5%	1/10W
R335	1-216-025-11	RES-CHIP	100	5%	1/10W
R336	1-216-025-11	RES-CHIP	100	5%	1/10W
R337	1-216-073-91	RES-CHIP	10K	5%	1/10W
R338	1-216-077-91	RES-CHIP	15K	5%	1/10W
R339	1-216-035-00	RES-CHIP	270	5%	1/10W
R340	1-162-974-11	CERAMIC CHIP	0.01UF		50V
R342	1-216-295-91	SHORT	0		
R345	1-216-025-11	RES-CHIP	100	5%	1/10W
R348	1-216-025-11	RES-CHIP	100	5%	1/10W
R350	1-216-039-00	RES-CHIP	390	5%	1/10W
R352	1-216-073-91	RES-CHIP	10K	5%	1/10W
R353	1-216-119-00	RES-CHIP	820K	5%	1/10W
R354	1-216-119-00	RES-CHIP	820K	5%	1/10W
R355	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R356	1-216-049-11	RES-CHIP	1K	5%	1/10W
R357	1-216-101-00	RES-CHIP	150K	5%	1/10W
R358	1-216-025-11	RES-CHIP	100	5%	1/10W
R360	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R361	1-216-033-00	RES-CHIP	220	5%	1/10W
R362	1-216-083-00	RES-CHIP	27K	5%	1/10W
R363	1-216-295-91	SHORT	0		
R364	1-216-077-91	RES-CHIP	15K	5%	1/10W
R365	1-216-295-91	SHORT	0		
R367	1-216-099-00	RES-CHIP	120K	5%	1/10W
R368	1-216-049-11	RES-CHIP	1K	5%	1/10W

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REF NO.	PART NO.	DESCRIPTION		REMARK	
R369	1-216-123-11	RES-CHIP	1.2M	5%	1/10W
R370	1-216-083-00	RES-CHIP	27K	5%	1/10W
R371	1-208-820-11	METAL CHIP	39K	0.5%	1/10W
R374	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R376	1-216-295-91	SHORT	0		
R381	1-216-295-91	SHORT	0		
R392	1-216-069-00	RES-CHIP	6.8K	5%	1/10W
R393	1-216-049-11	RES-CHIP	1K	5%	1/10W
R400	1-216-295-91	SHORT	0		
R401	1-216-049-11	RES-CHIP	1K	5%	1/10W
R409	1-216-113-00	RES-CHIP	470K	5%	1/10W
R410	1-216-025-11	RES-CHIP	100	5%	1/10W
R411	1-216-049-11	RES-CHIP	1K	5%	1/10W
R412	1-216-049-11	RES-CHIP	1K	5%	1/10W
R413	1-216-113-00	RES-CHIP	470K	5%	1/10W
R414	1-216-049-11	RES-CHIP	1K	5%	1/10W
R415	1-216-073-91	RES-CHIP	10K	5%	1/10W
R416	1-216-073-91	RES-CHIP	10K	5%	1/10W
R417	1-216-021-00	RES-CHIP	68	5%	1/10W
R418	1-216-025-11	RES-CHIP	100	5%	1/10W
R420	1-216-049-11	RES-CHIP	1K	5%	1/10W
R421	1-216-049-11	RES-CHIP	1K	5%	1/10W
R423	1-208-820-11	METAL CHIP	39K	0.5%	1/10W
R424	1-216-091-00	RES-CHIP	56K	5%	1/10W
R425	1-211-990-11	METAL CHIP	75	0.5%	1/16W
R426	1-216-049-11	RES-CHIP	1K	5%	1/10W
R427	1-216-051-00	RES-CHIP	1.2K	5%	1/10W
R428	1-216-041-00	RES-CHIP	470	5%	1/10W
R429	1-216-073-91	RES-CHIP	10K	5%	1/10W
R430	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R432	1-216-121-11	RES-CHIP	1M	5%	1/10W
R433	1-216-091-00	RES-CHIP	56K	5%	1/10W
R434	1-216-049-11	RES-CHIP	1K	5%	1/10W
R436	1-211-990-11	METAL CHIP	75	0.5%	1/16W
R438	1-216-049-11	RES-CHIP	1K	5%	1/10W
R440	1-216-121-11	RES-CHIP	1M	5%	1/10W
R445	1-216-089-91	RES-CHIP	47K	5%	1/10W
R447	1-216-025-11	RES-CHIP	100	5%	1/10W
R500	1-260-126-81	CARBON	180K	5%	1/2W
R501	1-249-419-11	CARBON	1.5K	5%	1/4W
R502	1-216-370-11	METAL OXIDE	1.2	5%	2W
R503	1-216-091-00	RES-CHIP	56K	5%	1/10W
R504	1-216-091-00	RES-CHIP	56K	5%	1/10W
R505	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R506	1-260-125-11	CARBON	150K	5%	1/2W
R507	1-260-288-11	CARBON	0.47	5%	1/2W
R508	1-260-288-11	CARBON	0.47	5%	1/2W
R509	1-260-288-11	CARBON	0.47	5%	1/2W
R510	1-260-127-11	CARBON	220K	5%	1/2W
R511	1-215-449-00	METAL	15K	1%	1/4W
R512	1-215-453-00	METAL	22K	1%	1/4W
R513	1-215-445-00	METAL	10K	1%	1/4W
R514	1-249-421-11	CARBON	2.2K	5%	1/4W
R520	1-216-073-91	RES-CHIP	10K	5%	1/10W
R521	1-216-073-91	RES-CHIP	10K	5%	1/10W
R522	1-216-073-91	RES-CHIP	10K	5%	1/10W
R523	1-216-081-00	RES-CHIP	22K	5%	1/10W
R524	1-216-081-00	RES-CHIP	22K	5%	1/10W
R525	1-216-295-91	SHORT	0		
R526	1-216-081-00	RES-CHIP	22K	5%	1/10W
R527	1-216-081-00	RES-CHIP	22K	5%	1/10W

REF NO.	PART NO.	DESCRIPTION		REMARK	
R528	1-215-857-71	METAL OXIDE	10	5%	1W
R553	1-249-385-11	CARBON	2.2	5%	1/4W
R554	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R557	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R558	1-216-081-00	RES-CHIP	22K	5%	1/10W
R559	1-216-089-91	RES-CHIP	47K	5%	1/10W
R563	1-216-655-11	METAL CHIP	1.5K	0.5%	1/10W
R564	1-215-865-11	METAL OXIDE	220	5%	1W
R565	1-216-350-11	METAL OXIDE	1.2	5%	1W
R567	1-208-790-11	METAL CHIP	2.2K	0.5%	1/10W
R568	1-215-461-00	METAL	47K	1%	1/4W
R600	1-215-915-11	METAL OXIDE	470	5%	3W
R602	1-240-262-11	CEMENTED (EXCEPT KV-PG21P40(MALAYSIA)	0.68	5%	10W
R602	1-205-998-11	CEMENTED (KV-PG21P40(MALAYSIA)	1	5%	10W
R603	1-240-262-11	CEMENTED (EXCEPT KV-PG21P40(MALAYSIA)	0.68	5%	10W
R603	1-205-998-11	CEMENTED (KV-PG21P40(MALAYSIA)	1	5%	10W
R605	1-217-191-21	METAL	0.18	10%	2W
R606	1-216-045-00	RES-CHIP	680	5%	1/10W
R608	1-260-127-11	CARBON	220K	5%	1/2W
R609	1-216-091-00	RES-CHIP	56K	5%	1/10W
R610	1-215-926-00	METAL OXIDE	33K	5%	3W
R611	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R612	1-249-420-11	CARBON	1.8K	5%	1/4W
R614	1-216-397-11	METAL OXIDE	4.7	5%	3W
R615	1-215-877-11	METAL OXIDE	22K	5%	1W
R617	1-216-049-11	RES-CHIP	1K	5%	1/10W
R619	1-218-265-11	METAL	8.2M	5%	1W
R620	1-249-389-11	CARBON	4.7	5%	1/4W
R623	1-216-053-00	RES-CHIP	1.5K	5%	1/10W
R624	1-260-126-81	CARBON	180K	5%	1/2W
R627	1-240-262-11	CEMENTED (EXCEPT KV-PG21P40(MALAYSIA)	0.68	5%	10W
R627	1-205-998-11	CEMENTED (KV-PG21P40(MALAYSIA)	1	5%	10W
R628	1-216-295-91	SHORT	0		
R800	1-216-049-11	RES-CHIP	1K	5%	1/10W
R801	1-216-081-00	RES-CHIP	22K	5%	1/10W
R802	1-215-917-11	METAL OXIDE	1K	5%	3W
R803	1-260-332-51	CARBON	2.2K	5%	1/2W
R806	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R808	1-249-421-11	CARBON	2.2K	5%	1/4W
R810	1-215-886-11	METAL OXIDE	100	5%	2W
R811	1-215-911-11	METAL OXIDE	100	5%	3W
R812	1-215-917-11	METAL OXIDE	1K	5%	3W
R813	1-216-049-11	RES-CHIP	1K	5%	1/10W
R814	1-215-917-11	METAL OXIDE	1K	5%	3W
R860	1-216-103-00	RES-CHIP	180K	5%	1/10W
R861	1-216-295-91	SHORT	0		
R862	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R863	1-216-073-91	RES-CHIP	10K	5%	1/10W
R864	1-208-794-11	METAL CHIP	3.3K	0.5%	1/10W
R865	1-216-073-91	RES-CHIP	10K	5%	1/10W
R866	1-216-049-11	RES-CHIP	1K	5%	1/10W
R867	1-208-812-11	METAL CHIP	18K	0.5%	1/10W
R868	1-249-393-11	CARBON	10	5%	1/4W
R869	1-249-381-11	CARBON	1	5%	1/4W
R870	1-208-838-91	METAL CHIP	220K	0.5%	1/10W

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

A CV

REF NO.	PART NO.	DESCRIPTION		REMARK	
R874	1-215-475-00	METAL	180K	1%	1/4W
R878	1-216-049-11	RES-CHIP	1K	5%	1/10W
R879	1-216-057-00	RES-CHIP	2.2K	5%	1/10W
R880	1-216-097-11	RES-CHIP	100K	5%	1/10W
R881	1-216-085-91	RES-CHIP	33K	5%	1/10W
R882	1-216-073-91	RES-CHIP	10K	5%	1/10W
R883	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R884	1-216-089-91	RES-CHIP	47K	5%	1/10W
R885	1-216-073-91	RES-CHIP	10K	5%	1/10W
R886	1-216-295-91	SHORT	0		
R887	1-215-477-00	METAL	220K	1%	1/4W
R888	1-215-477-00	METAL	220K	1%	1/4W
R889	1-208-830-11	METAL CHIP	100K	0.5%	1/10W
		<SWITCH>			
S001	1-692-431-21	SWITCH, TACTILE			
S002	1-692-431-21	SWITCH, TACTILE			
S003	1-692-431-21	SWITCH, TACTILE			
S004	1-692-431-21	SWITCH, TACTILE			
S005	1-692-431-21	SWITCH, TACTILE			
S006	1-692-431-21	SWITCH, TACTILE			
S600	1-571-433-21	SWITCH, PUSH (AC POWER)			
S800	1-572-707-11	SWITCH, LEVER			
		<#########			
SWF100	1-781-042-11	FILTER, SURFACE WAVE			
		<TRANSFORMER>			
T503	1-453-329-21	TRANSFORMER ASSY FLY BACK (NX-4751//M3A4)			
T600	1-431-747-11	TRANSFORMER, LINE FILTER			
T601	1-437-333-11	TRANSFORMER, CONVERTER (SRT)			
T800	1-435-374-11	TRANSFORMER, FERRITE (HDT)			
		<THERMISTOR>			
THP600	1-803-744-11	THERMISTOR, POSITIVE			
		<TUNER>			
TU100	8-598-591-00	TUNER, VSS BT-AG402			
		<VARISTOR>			
VDR600	1-803-830-11	VARISTOR (ERZV14D621)			
		<CRYSTAL>			
X001	1-577-358-21	VIBRATOR, CERAMIC			
X300	1-567-505-11	OSCILLATOR, CRYSTAL			
X301	1-567-504-11	OSCILLATOR, CRYSTAL			

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REF NO.		PART NO.	DESCRIPTION			
	*	A-1332-200-A	CV BOARD MOUNTED			
			**********			
		4-382-854-01	SCREW (M3X8), P, SW (+)			
			<CAPACITOR>			
C701		1-115-350-51	CERAMIC	0.0047UF		2KV
C702		1-102-074-00	CERAMIC	0.001UF	10.00%	50V
C703		1-107-651-11	ELECT	4.7UF	20.00%	250V
C704		1-130-202-00	FILM	0.022UF	5.00%	400V
C706		1-126-947-11	ELECT	47UF	20.00%	16V
C708		1-102-114-00	CERAMIC	470PF	10.00%	50V
C709		1-102-114-00	CERAMIC	470PF	10.00%	50V
C710		1-102-114-00	CERAMIC	470PF	10.00%	50V
C712		1-102-115-00	CERAMIC	560PF	10.00%	50V
C713		1-102-116-00	CERAMIC	680PF	10.00%	50V
C714		1-102-116-00	CERAMIC	680PF	10.00%	50V
C716		1-126-933-11	ELECT	100UF	20.00%	16V
C717		1-102-852-91	CERAMIC	47PF	5.00%	50V
C718		1-126-933-11	ELECT	100UF	20.00%	16V
C719		1-102-116-00	CERAMIC	680PF	10.00%	50V
			<CONNECTOR>			
CN701	*	1-564-508-11	PLUG, CONNECTOR 5P			
CN702		1-695-915-11	TAB (CONTACT)			
CN703	*	1-564-509-11	PLUG, CONNECTOR 6P			
CN704		1-695-915-11	TAB (CONTACT)			
			<DIODE>			
D701		8-719-911-19	1SS119-25			
D702		8-719-911-19	1SS119-25			
D703		8-719-911-19	1SS119-25			
D707		8-719-911-19	1SS119-25			
D708		8-719-911-19	1SS119-25			
D709		8-719-911-19	1SS119-25			
D713		8-719-911-19	1SS119-25			
D714		8-719-911-19	1SS119-25			
D715		8-719-911-19	1SS119-25			
D716		8-719-911-19	1SS119-25			
D717		8-719-070-16	NNCD9.1A-T1			
			<JACK>			
J701	⚠	1-540-071-22	SOCKET, CRT			
			<COIL>			
L701		1-414-185-41	INDUCTOR	22UH		
L710		1-414-186-31	INDUCTOR	33UH		
L711		1-414-185-41	INDUCTOR	22UH		
L712		1-414-185-41	INDUCTOR	22UH		
			<TRANSISTOR>			
Q704		8-729-326-11	2SC2611			
Q705		8-729-326-11	2SC2611			
Q706		8-729-326-11	2SC2611			
Q707		8-729-200-17	2SA1091-O			
Q708		8-729-200-17	2SA1091-O			

CV

REF NO.	PART NO.	DESCRIPTION			REMARK
Q709	8-729-200-17	2SA1091-O			
Q710	8-729-119-78	2SC2785-HFE			
Q711	8-729-119-78	2SC2785-HFE			
Q712	8-729-119-78	2SC2785-HFE			
		<RESISTOR>			
R703	1-219-752-11	CARBON	100K	5%	1/2W
R706	1-215-417-00	METAL	680	1%	1/4W
R707	1-215-413-00	METAL	470	1%	1/4W
R708	1-216-387-11	METAL OXIDE	0.68	5%	3W
R710	1-216-486-00	METAL OXIDE	8.2K	5%	3W
R711	1-260-330-11	CARBON	1.5K	5%	1/2W
R712	1-216-486-00	METAL OXIDE	8.2K	5%	3W
R713	1-260-330-11	CARBON	1.5K	5%	1/2W
R714	1-216-486-00	METAL OXIDE	8.2K	5%	3W
R715	1-260-330-11	CARBON	1.5K	5%	1/2W
R716	1-249-923-11	CARBON	1K	5%	1/4W
R717	1-249-923-11	CARBON	1K	5%	1/4W
R718	1-249-923-11	CARBON	1K	5%	1/4W
R725	1-249-421-11	CARBON	2.2K	5%	1/4W
R726	1-249-421-11	CARBON	2.2K	5%	1/4W
R727	1-249-421-11	CARBON	2.2K	5%	1/4W
R728	1-249-408-11	CARBON	180	5%	1/4W
R729	1-249-408-11	CARBON	180	5%	1/4W
R730	1-249-408-11	CARBON	180	5%	1/4W
R731	1-249-407-11	CARBON	150	5%	1/4W
R732	1-249-407-11	CARBON	150	5%	1/4W
R733	1-249-407-11	CARBON	150	5%	1/4W
R734	1-219-743-11	CARBON	100	5%	1/2W
R738	1-247-807-31	CARBON	100	5%	1/4W
R739	1-247-807-31	CARBON	100	5%	1/4W
R740	1-247-807-31	CARBON	100	5%	1/4W
R755	1-249-418-11	CARBON	1.2K	5%	1/4W
R756	1-249-418-11	CARBON	1.2K	5%	1/4W
R757	1-249-418-11	CARBON	1.2K	5%	1/4W
		<VARIABLE RESISTOR>			
RV702	1-241-656-11	RES, ADJ, METAL FILM 110M			

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ACCESSORIES AND PACKING MATERIALS
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	3-701-910-00	SCREW, SPECIAL (DIA. 3.8X20)
*	4-083-905-11	INDIVIDUAL CARTON (KV-PG21M70/PG21P70)
*	4-083-905-02	INDIVIDUAL CARTON (KV-PG21P40(SINGAPORE)/ PG21P40(MALAYSIA)
*	4-085-465-01	CUSHION LOWER (KV-PG21M70/PG21P70)
*	4-085-466-01	CUSHION UPPER (KV-PG21M70/PG21P70)
*	4-395-957-01	BAG, PROTECTION
	4-084-172-11	MANUAL INSTRUCTION (KV-PG21P40(MALAYSIA)/ PG21P40(SINGAPORE)
	4-084-862-11	MANUAL INSTRUCTION (KV-PG21M70)
	4-084-172-31	MANUAL INSTRUCTION (KV-PG21P70)
	4-392-003-11	BAND, HOLD
	4-392-004-11	CLIP

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REMOTE COMMANDER
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	1-418-163-51	REMOTE COMMANDER (RM-952)
	9-939-697-01	COVER BATTERY REMOTE COMMANDER

Sony Corporation
Sony Technology Malaysia Sdn. Bhd.
Visual Products General Area

9-872-260-01

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